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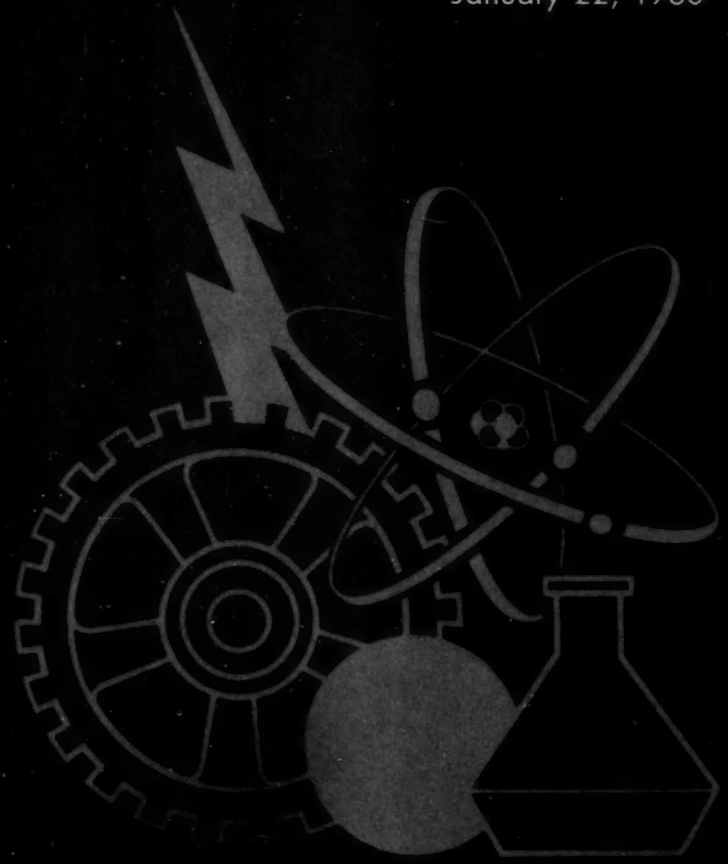

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January 22, 1980 Volume 990 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT, including the amounts of the fees thereunder and the States that may be designated in international applications, consult the notice entitled "Update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 3, 1979.

Effective August 1, 1979 the international fees are increased to the following amounts:

Basic fee under PCT Rule 15.1(i) for an international application containing 30 sheets or less	$190.00
Supplemental fee to the Basic fee for each page of an international application in excess of 30 sheets	3.50
Designation fee under PCT Rule 15.1(ii)	45.00

LUTRELLE F. PARKER,
July 3, 1979. *Acting Commissioner of Patents and Trademarks.*

National Inventors' Day

The Patent and Trademark Office, along with the National Council of Patent Law Associations, will co-sponsor National Inventors Day in the Public Search Room on Saturday, February 9, 1980 from 1:00 p.m. to 5:00 p.m. and Sunday, February 10, 1980 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend the ceremony at 2:00 p.m. on Sunday, February 10, 1980, during which four inventors will be inducted into the National Inventors Hall of Fame.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, February 8, 1980 at 5:00 p.m. We would appreciate the cooperation of all users of the Search facilities by removing all personal property and items for the early closing.

LUTRELLE F. PARKER,
Nov. 27, 1979. *Acting Commissioner of Patents and Trademarks.*

Department of the Treasury
United States Customs Service

(T.D. 79-321)

NOTICE OF RECORDATION OF TRADE NAME

OHAUS SCALE CORPORATION

On October 25, 1979, there was published in the Federal Register (44 FR 61491) a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name OHAUS SCALE CORPORATION. The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 30 days from the date of publication of the notice. No responses were received in opposition to the application.

The name "OHAUS SCALE CORPORATION" is hereby recorded as the trade name of Ohaus Scale Corporation, a corporation organized under the laws of the State of New Jersey, located at 29 Hanover Road, Florham Park, New Jersey 07932, when applied to weighing apparatus, including balances, scales, weights and containers and accessories for same, manufactured in the United States. No foreign company, parent or subsidiary company is authorized to use the trade name.

HARVEY B. FOX,
Dated: Dec. 7, 1979. *Acting Director, Office of Regulations and Rulings.*

(T.D. 80-3)

NOTICE OF RECORDATION OF TRADE NAME

XYLOGICS, INC.

On November 9, 1979, there was published in the Federal Register (44 F.R. 65229) a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name XYLOGICS, INC. The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 30 days from the date of publication of the notice. No responses were received in opposition to the application.

The name "XYLOGICS, INC." is hereby recorded as the trade name of Xylogics, Inc., a corporation organized under the laws of the State of Delaware located at 42 Third Avenue, Burlington, Massachusetts 01803, when applied to electronic data processing equipment, including central processing units, memory devices, controllers, interfaces and tape drives, disc drives, terminals, and other peripheral input and output equipment, manufactured in England and the United States. Zylogics International, Ltd., Lyton House, Mill Lane, Gerrards Cross, Bucks SL98AY, Great Britain is authorized to use the trade name.

HARVEY B. FOX,
Dated: Dec. 14, 1979. *Acting Director, Office of Regulations and Rulings.*

Removal From Register

Pursuant to the provisions of 37 C.F.R. 1.347, a letter was directed on October 9, 1979, to the last post office address furnished to the Committee on Enrollment by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of thirty days therein set. Other letters were returned by the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address. Accordingly, the names of the following persons have been remove from the Register of Patent Attorneys and Patent Agents.

LUTRELLE F. PARKER,
Dec. 14, 1979. *Chairman, Committee on Enrollment.*

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REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,783,407, Re. S.N. 091,121, Filed Nov. 5, 1979, Cl. 331/94.5 C, IMPROVED LASER OPTICAL RESONATOR, Wayne S. Mefferd, et al., Owner of Record: *Coherent Radiation Laboratories, Palo Alto, Calif.,* Attorney or Agent: Carl A. Limbach, et al., Ex. Gp.: 254

3,858,606, Re. S.N. 082,600, Filed Oct. 9, 1979, Cl. 137/596.16, SAFETY CONTROL VALVE SYSTEM FOR FLUID ACTUATED DEVICES, Russell J. Cameron, Owner of Record: *Ross Operating Valve Company, Detroit, Mich.,* Attorney or Agent: Cyrus G. Minkler, et al., Ex. Gp.: 341

3,869,721, Re. S.N. 091,879, Filed Nov. 7, 1979, Cl. 360/77, RECOVERY OF NORMALLY ILLEGIBLE, MAGNETICALLY RECORDED INFORMATION, Peter B. Korda, Owner of Record: *RCA Corporation, Princeton, N.J.,* Attorney or Agent: Harold Christoffersen, Ex. Gp.: 235

4,139,906, Re. S.N. 080,980, Filed Oct. 2, 1979, Cl. 356/15, SWITCH FOR FAULT TOLERANT BUBBLE DOMAIN MEMORY SYSTEMS, Thomas T. Chen, Owner of Record: *Rockwell International Corp., Anaheim, Calif.,* Attorney or Agent: H. Fredrick Hamann, et al., Ex. Gp.: 235

PATENT NOTICES

Certificates of Correction for the Week of Jan. 22, 1980

Plt. 4,438	4,094,921	4,157,159	4,169,345
Re. 30,059	4,098,963	4,157,682	4,169,550
Re. 30,062	4,107,183	4,158,934	4,169,612
D. 246,596	4,107,720	4,159,741	4,170,145
D. 253,128	4,108,235	4,159,983	4,170,195
3,424,111	4,113,381	4,160,357	4,170,276
3,991,201	4,114,982	4,162,477	4,170,603
3,996,282	4,115,861	4,163,057	4,170,604
3,997,340	4,116,928	4,163,716	4,170,677
3,997,526	4,118,571	4,163,829	4,170,784
3,999,432	4,130,049	4,163,909	4,170,908
4,012,350	4,137,525	4,164,109	4,171,146
4,016,831	4,139,547	4,164,408	4,171,230
4,031,121	4,139,576	4,164,409	4,171,233
4,032,699	4,139,866	4,164,428	4,171,272
4,038,078	4,140,056	4,165,763	4,171,405
4,039,236	4,140,775	4,165,789	4,171,436
4,045,939	4,141,906	4,165,802	4,171,437
4,045,943	4,142,209	4,166,006	4,171,444
4,047,004	4,142,369	4,166,070	4,171,546
4,055,561	4,143,065	4,166,168	4,171,675
4,057,745	4,143,135	4,167,209	4,171,679
4,057,955	4,145,254	4,167,412	4,172,291
4,058,762	4,145,355	4,167,524	4,172,591
4,065,665	4,147,209	4,167,616	4,172,848
4,070,641	4,149,695	4,167,768	4,172,884
4,071,624	4,150,976	4,168,050	4,173,533
4,072,529	4,153,633	4,168,159	4,173,814
4,078,629	4,153,634	4,168,473	4,173,999
4,078,703	4,154,719	4,168,947	4,174,009
4,082,749	4,156,012	4,168,955	
4,082,829	4,156,388	4,168,969	
4,094,694	4,156,423	4,169,045	

Disclaimers

3,757,449.—*Willard R. Schindler,* Granada Hills, Calif. DEVICE FOR LOADING SHELLS. Patent dated Sept. 11, 1973. Disclaimer filed Oct. 17, 1979, by the assignee, *Olin Corporation.*

Hereby enters this disclaimer to claims 2 and 3 of said patent.

3,790,105.—*Karl Eickman,* Kanagawa, Japan. HYDRAULICALLY CONTROLLED FLUID STREAM DRIVEN VEHICLE. Patent dated Feb. 5, 1974. Disclaimer filed Nov. 5, 1979, by the inventor.

The term of this patent subsequent to Feb. 5, 1991, has been disclaimed.

3,896,137.—*Clifton A. Baile,* Glen Mills, Pa.; *Paul E. Bender,* Willingboro, N.J.; and *Bernard Loev,* Broomall, Pa. 8-ALKYL AND ALKENYL-10-HYDROXY-5H [1] BENZOPYRANOPYRIDINE DERIVATIVES AND USES THEREOF. Patent dated July 22, 1975. Disclaimer filed Oct. 24, 1979, by the assignee, *Smithkline Corporation.*

Hereby enters this disclaimer to claims 1, 4, 5, 7 and 8 of said patent.

4,105,681.—*Werner Bollag,* Basel; *Rudolf Ruegg,* Bottmingen; and *Gottlieb Ryser,* Basel, Switzerland. 9-PHENYL 5,6 - DIMETHYL-NONA - 2,4,6,8-TETRAEONIC ACID COMPOUNDS. Patent dated Aug. 8, 1978. Disclaimer filed Aug. 17, 1979, by the assignee, *Hoffman-La Roche Inc.*

Hereby enters this disclaimer to claims 1–4 of said patent.

4,127,313.—*Bruce G. Marks,* Lancaster, Pa. HIGH VOLTAGE ELECTRON TUBE BASE WITH DRIP RELIEF MEANS. Patent dated Nov. 28, 1978. Disclaimer filed Nov. 8, 1979, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claim 7 of said patent.

Dedication

3,920,525.—*Howard A. Fromson,* Weston, Conn. PROCESS FOR CONTINUOUSLY ANODIZING ALUMINUM. Patent dated Nov. 18, 1975. Dedication filed Oct. 29, 1979, by the inventor.

Hereby dedicates to the Public the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 1, 1979

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-1-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines: Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-3-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR. Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, Treating Processes, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	2-8-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-4-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-10-78
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-13-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear and Reactors; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptograph; Laser Devices; Radioactive Materials; Power Metallurgy, Rocket Fuels.	5-19-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-2-78
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-31-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-1-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-9-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-1-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-1-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	11-21-78
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-4-78
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Textiles; Apparel and Shoes; Sewing Machines; Machine Elements; Clutches.	2-29-78

Expiration of patents: The patents within the range of numbers indicated below expire during December 1979, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,066,302 to 3,070,800, inclusive
Plant Patents..... Numbers 2,198 to 2,207, inclusive

REISSUES

JANUARY 22, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,196

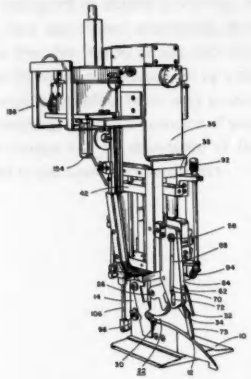
SINGLE PISTON OPERATED CLIP DEVICE

Clyde R. Velarde, Raleigh, N.C., assignor to Rheem Manufacturing Company, New York, N.Y.

Original No. 4,004,339, dated Jan. 25, 1977, Ser. No. 565,581, Apr. 7, 1975. Application for reissue Sep. 7, 1978, Ser. No. 940,520

Int. Cl.[2] **B23P** *11/00*

U.S. Cl. 29—243.56 **20 Claims**



1. An improved clipper mechanism comprising in conbination:

a. a bracket assembly including fixed punch guide means defining a portion of a punch and clip guide channel, clip feed means for feeding a clip into the channel, and die means at one end of said channel for forming a clip cooperatively with punch means;

b. reciprocal punch means mounted in the fixed punch guide means for travel in the channel between a retracted position and an extended, clip attachment position;

c. drive means for driving said punch means reciprocally between the retracted and extended positions, said drive means mounted on the bracket assembly;

d. gate means attached to the assembly for cooperation with the punch guide means to form a complete closed channel to guide a clip into cooperation with the die means, [and] *said* gate means being removable from cooperation with the punch guide means forming the channel to define a throat opening for positioning material to be clipped over the die means; and

e. mechanical linkage means connecting the gate means with the drive means for retracting the gate means from cooperation with the punch guide means to expose the throat opening when the punch means are in the retracted position and for closing the gate means to form a continuous, closed channel for said clip and punch means upon operation of the drive means to transport the punch means toward the extended position, said gate means being closed prior to travel of the punch means to the extended position[.], *said mechanical linkage means including*

(i) a fixed cam plate attached to the bracket assembly, said cam plate including a cam slot;

(ii) an actuator member attached to the drive means and movable reciprocally therewith, said actuator including cam track overlying portions of the cam slot; and

(iii) a link pivotally attached to the gate means at one end and including a follower at the opposite end, said follower simultaneously cooperating with the cam slot and cam track.

Re. 30,197

CHEWING GUM WITH IMPROVED STORAGE QUALITIES

Robert E. Klose, West Nyack; Alina S. Szczesniak, Mount Vernon; Bernard J. Bahoshy, Mahopac, and Ragnar E. Sjonvall, Eastchester, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Original No. 4,000,320, dated Dec. 28, 1976, Ser. No. 644,701, Dec. 29, 1975. Application for reissue Apr. 7, 1977, Ser. No. 785,407

Int. Cl.[2] **A23G** *3/30*

U.S. Cl. 426—3 **3 Claims**

1. In a sugar sweetened chewing gum composition which comprises gum base, flavor and sugar wherein the improvement comprises adding xylitol to the chewing gum composition in amounts less than [50%] *10%* by weight of total gum composition which is effective to extend the storage stability of the gum.

PLANT PATENTS

GRANTED JANUARY 22, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,495

MINIATURE ROSE PLANT

Ralph S. Moore, 2519 East Noble Ave., Visalia, Calif. 93277

Filed Nov. 24, 1978, Ser. No. 963,575
Int. Cl. A01H 5/00
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, compact, spreading much branched habit, substantially as illustrated and described, characterized by buds and flowers which are (A) variegated or striped in varying shades of red and white, the bud and flower resembling Stars'N Stripes miniature (Plant Pat. No. 4,029) in size and shape but with more petals; and (B) further characterized by a plant which is vigorous, of compact spreading habit, easy to propagate from cuttings or by budding, with an abundance of small size semi-glossy to matt foliage and an abundance of flowers borne singly or several to the stem in loose clusters.

4,496

MINIATURE ROSE PLANT

Ralph S. Moore, 2519 East Noble Ave., Visalia, Calif. 93277

Filed Dec. 11, 1978, Ser. No. 968,477
Int. Cl.[2] A01H 5/00
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit substantially as illustrated and described characterized by buds and flowers which are (1) clear orange in color, with sometimes darker shading, the buds and flowers resembling Over the Rainbow (miniature—U.S. Plant Pat. No. 3,472) in size and shape and (2) as grown outdoors in cool weather the orange coloring of bud and flower being overlaid or blended with varying shades of red to give a multicolor effect similar to the Floribunda rose Circus (U.S. Plant Pat. No. 1,382, expired); and further characterized by a plant which is vigorous and compact, easy to propagate from soft wood cuttings or by budding, with an abundance of flowers borne singly or several to the stem in loose clusters.

PATENTS

GRANTED JAN. 22, 1980

ERRATA

For CLASS	See PATENT NO.
433–029	4,184,251
433–172	4,184,252
433–171	4,184,253
433–017	4,184,254
433–006	4,184,255
433–082	4,184,256
433–082	4,184,257
433–088	4,184,258
433–004	4,184,259
131–009	4,184,495
131–170 A	4,184,496
126–419	4,184,635
273–237	4,184,676
297–016	4,184,711
405–108	4,184,786
405–057	4,184,794
416–095	4,184,797
165–076	4,184,862
430–053	4,184,870
430–070	4,184,871
430–365	4,184,872
430–258	4,184,873
430–236	4,184,874
430–407	4,184,875
430–505	4,184,876
430–567	4,184,877
430–567	4,184,878
430–323	4,184,910
435–241	4,184,916
435–068	4,184,917
435–106	4,184,918
435–175	4,184,919
435–019	4,184,920
435–011	4,184,921
435–284	4,184,922
435–010	4,184,923
219–010.55 D	4,184,945
548–126	4,185,018
585–467	4,185,040

525–188	4,185,041
525–332	4,185,042
525–364	4,185,043
525–001	4,185,044
525–181	4,185,045
525–444	4,185,046
525–094	4,185,047
525–080	4,185,048
525–084	4,185,049
525–221	4,185,050
525–370	4,185,051
528–326	4,185,063
340–684	4,185,224

PATENTS

GRANTED JANUARY 22, 1980

GENERAL AND MECHANICAL

4,184,212

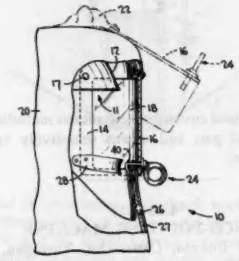
LIFT-FRONT FIREFIGHTER'S HOOD

J. Robert Bowman, Hooksett, N.H., assignor to Globe Manufacturing Co., Pittsfield, N.H.

Filed Sep. 5, 1978, Ser. No. 939,693

Int. Cl.[2] A42B *3/00*; E05C *3/04*; A62B *17/04*

U.S. Cl. 2—5 **6 Claims**



1. A hood adapted for use by firefighters comprising a helmet including a bump cap capable of fitting onto the top of the head of a wearer and a rigid liner attached to the bump cap and extending down from the front of the cap so as to be in front of the face of a wearer, the liner having an opening therein so as to allow a wearer to have vision, a shroud of flexible material attached to the exterior of the helmet and extending about the helmet so as to form a generally cylindrical skirt about the head and upper torso of a wearer, the shroud having an opening therein coextensive with the opening in the liner, a shield plate comprising a sheet of transparent material covering the opening in the liner and shroud and attached to the liner by hinges, and a rotatable latch on the shield plate comprising a shaft projecting through a hole in the shield plate, handle means on the end of the shaft on the exterior of the shield plate, and a transverse arm on the other end of the shaft capable of engaging the edge of the opening of the liner so as to lock the shield plate over the opening in the liner and shroud.

4,184,213

ARTICULATORY ENDOPROSTHESES OF NONMETALLIC MATERIALS

Günther Heimke, Zinkgräfstrasse 62, Weinheim, Fed. Rep. of Germany (D-6940)

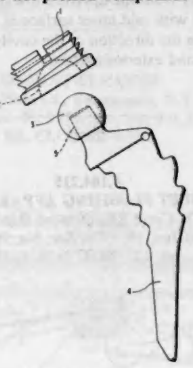
Filed Jun. 15, 1978, Ser. No. 915,779

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732923

Int. Cl.[2] A61F *1/24*

U.S. Cl. 3—1.91 **3 Claims**

1. Articulatory endoprostheses, in particular for the highly-stressed parts of the motor apparatus, with dense aluminum oxide ceramic along the articulating surfaces of the joint, characterized in that the parts serving for the anchoring of the prostheses consist of hot-pressed compounds of silicon with



carbon and/or nitrogen that exhibit a bending strength of more than 600 N/mm^2.

4,184,214

MAMMA PROSTHESIS AND MOLD FOR THE MANUFACTURE THEREOF

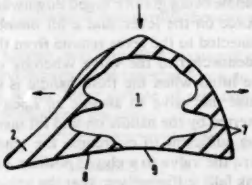
Gustav Schaper, Hanover, and Gertraud Prahl nee Strassmeier, Rullstorf, both of Fed. Rep. of Germany, assignors to Traudl Prahl, Rullstorf, Fed. Rep. of Germany

Filed Oct. 13, 1977, Ser. No. 841,952

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1976, 2650489

Int. Cl.[2] A61F *1/24*

U.S. Cl. 3—36 **4 Claims**



1. Mamma prosthesis comprising a molded hollow prosthesis body formed of a resilient plastic material and having an internal cavity therein, said body having a first exterior surface shaped to fit against the body of the wearer and a second exterior surface having a configuration corresponding to the shape of a natural mamma and projecting outwardly from said first surface when worn, said first surface having an aperture therethrough communicating with the internal cavity within said hollow prosthesis body, said aperture comprising a bottleneck shaped opening into the internal cavity, wherein the improvement comprises that the hollow prosthesis body comprises an inner surface defining the internal cavity with the internal cavity extending from the aperture in said first exterior surface toward and spaced inwardly from said second exterior surface, and said inner surface having the configuration of a thrust type cup spring with the inner surface defining at least one inwardly projecting annular rib located intermediate and in spaced relation to the aperture and to the oppositely disposed portion of said inner surface and dividing the internal

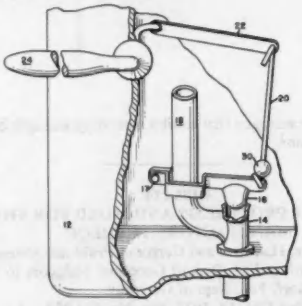
cavity into two intercommunicating spaces with the space closer to the aperture having a larger cross sectional area transverse to the direction of the cavity from the aperture toward said second exterior surface than the other space, and said inner surface having an arcuate configuration in the direction of the cavity from the aperture toward said second exterior surface and with said inner surface in each of said spaces being concave in the direction of the cavity from the aperture toward said second exterior surface.

4,184,215

TOILET FLUSHING APPARATUS

Leo S. Birdsall, 71 Carol Rd., Ormond Beach, Fla. 32074

Filed Jun. 19, 1978, Ser. No. 916,958
Int. Cl.[2] E03D *5/09, 1/35*
U.S. Cl. 4—411 **5 Claims**



1. A toilet tank flushing apparatus comprising a toilet tank having an outlet port through the bottom thereof, a buoyant valve closing said port, a weight bearing on and retaining the valve in a closed position when submerged, a weighted flush handle swingably mounted on the tank, a lever fixed to said handle, said handle being gravity urged downwardly for exerting a lifting force on the lever, and a lift member having an upper end connected to the lever remote from the handle and a lower end connected to the valve whereby the valve and weight will be lifted when the flush handle is swung downwardly to cause the valve to assume an open position, the lifting force exerted by the handle on said lift member through the lever being sufficient to overcome the tendency of said weight to return the valve to a closed position until the water level in the tank falls sufficiently so that the valve is no longer buoyantly supported or until the flush handle is swung upwardly so that the lift member no longer exerts a lifting force on the valve.

4,184,216

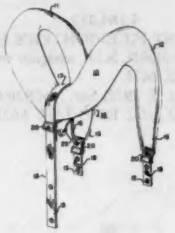
INFLATABLE SUSPENDERS

Merrill E. Saleen, 1250 W. Ustick Rd., Meridian, Id. 83642

Filed Jun. 9, 1976, Ser. No. 694,456
Int. Cl.[2] B63C *9/18*
U.S. Cl. 9—318 **4 Claims**

1. Inflatable suspenders, comprising:

an elongated envelope being closed at its respective terminal ends and having fastened in superimposed registry over a portion at its mid-point a strap including a slip hook at one of its terminal ends to form a substantially Y-shaped construction, the terminal ends of said envelope being closed and being provided with fasteners being means engageable with suspender buttons on an apparel; and



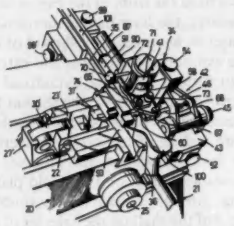
means inflating said envelope, said means including a capsule of pressurized gas, and means selectively opening said capsule of gas.

4,184,217

PINCH-POINTING MACHINE

Kameo Dohi, 992 Rokujo, Chuzu-cho, Yasu-gun, Shiga-ken, Japan

Filed May 8, 1978, Ser. No. 903,405
Claims priority, application Japan, May 9, 1977, 52/53567
Int. Cl.[2] B23G *9/06, 11/00*
U.S. Cl. 10—9 **10 Claims**



1. A pinch-pointing machine for pointing shanks of work blanks comprising:

a pair of die-heads operatively supported on a machine bed and selectively movable in a lateral direction toward and away from each other;

a pair of forging dies, one of said forging dies being mounted on an end of each of said die-heads and operatively positioned so that when said pair of die-heads move toward each other, a shank portion of a work blank is plastically deformed therebetween by means of said forging dies;

a feed dial positioned above said forging dies and rotatably supported on an axis orthogonal to the lateral direction of movement of said forging dies;

a plurality of engagement grooves formed on the periphery of said feed dial;

said engagement grooves being regularly spaced apart from one another;

each of said engagement grooves being adapted to accommodate a single work blank therein;

a feed track having one end positioned adjacent to said feed dial for feeding a plurality of said blanks successively to each of said engagement grooves;

said feed dial being adjustably mounted to be selectively movable in the same lateral direction of movement as said die-heads; and

said feed dial being adjustably mounted to be movable in a direction transverse to said lateral direction of movement of said die-heads and on a parallel plane therewith.

4,184,218

BOOKBINDING

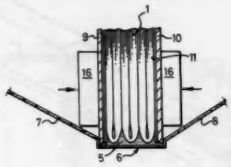
Charles V. Hawkes, Leatherhead, England, assignor to The Research Association for the Paper and Board, Printing and Packaging Industries, Leatherhead, England

Filed Dec. 2, 1977, Ser. No. 857,042

Claims priority, application United Kingdom, Dec. 21, 1976, 53264/76

Int. Cl.² B42C 9/00; B42D 1/00

U.S. Cl. 11—1 AD **10 Claims**



1. A method of producing a fastback book including the steps of providing a block of pages and a cover for the block, both the block and the cover having a respective spine, the spine of the cover being thin and flexible compared with the front and back portions of the cover, bonding the spine of the block to the spine of the cover, the front and back portions of the cover being reinforced with boards, the method further including the steps of clamping the block and the boards, drawing on a flexible cover, which cover is thinner than either of the boards and bonding said cover to the block spine and to the boards.

4,184,219

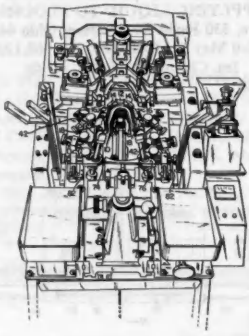
METHOD OF STRETCHING AN UPPER ABOUT THE VAMP OF A LAST

William C. Lindsey, Milford, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Aug. 10, 1978, Ser. No. 932,581

Int. Cl.² A43D 21/00

U.S. Cl. 12—145 **3 Claims**



1. A method, operable on a shoe assembly formed of a last having an insole located on its bottom and an upper mounted thereon, for stretching the upper about the vamp of the last prior to wiping the toe portion of the upper margin against the corresponding portion of the insole, the top of said last having a reentrant throat located between its toe and cone portions and the upper having a portion bridging the throat and being spaced therefrom, comprising: supporting the shoe assembly bottom-down on a support; causing front pincers to grip the upper margin toewardly of the throat; causing back pincers to grip the upper margin on each side of the shoe assembly heelwardly of the throat; and effecting relative upward movement of the support with respect to the pincers to effect said stretching, characterized in comprising: moving the back pincers towards the front pincers while all of said pincers are gripping the upper margin and prior to effecting said relative upward movement to cause the said upper portion to buckle into and bear against the throat.

4,184,220

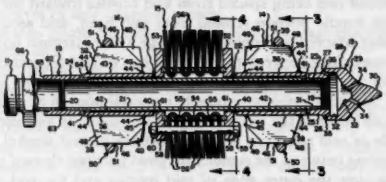
CONDUIT CLEANER

Thomas M. Coyle, 1 Hale Ct., Tonawanda, N.Y. 14150

Filed Dec. 20, 1978, Ser. No. 971,230

Int. Cl.² B08B 9/04

U.S. Cl. 15—104.2 **14 Claims**



1. A conduit cleaner adapted to be connected to the end of a hose supplied with pressurized fluid from a suitable source thereof, said conduit cleaner comprising:

an elongated tube having one marginal end portion connected to said hose and having another marginal end portion;

a jet nozzle mounted on such tube other marginal end portion, said jet nozzle having a plurality of rearwardly-directed openings through which fluid supplied through said hose and tube may be discharged to exert a reaction force on said nozzle and to propel such assembly forwardly along a conduit to be cleaned; and

a brush encircling said tube rearwardly of said nozzle, said brush having a plurality of bristles extending radially outwardly therefrom, said brush being arranged such that the distal end portions of said bristles are arranged in the path of fluid discharged rearwardly through said nozzle openings;

whereby, said cleaner may be pulled rearwardly along said conduit by overcoming said reaction force, to brush matter adhering to the inner surface of said conduit and to shear roots penetrating the same.

4,184,221

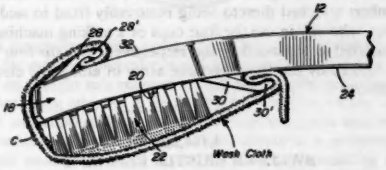
BATH BRUSH

Elizabeth G. Edwards, Uptown Station, Arcade, Nashville, Tenn. 37219

Filed Aug. 7, 1978, Ser. No. 931,740

Int. Cl.² A47K 7/02

U.S. Cl. 15—114 **2 Claims**



1. An elongated bath brush structure having remote opposite sides and defining an elongated longitudinal handle portion terminating at one end in an enlarged head, said head including brush bristles extending generally codirectionally from said

head outwardly of one of said sides, said head including a first elongated outwardly projecting resilient clip supported from and projecting outwardly of the other side of said structure and inclined outwardly toward the other end of said handle, the outer end of said clip terminating in an inwardly angled terminal end also inclined toward said other handle end and terminating a spaced distance outwardly from said other of said sides, said structure further including a second elongated outwardly projecting resilient clip supported from and projecting outwardly from said one side of said structure and inclined outwardly toward the other end of said handle, the outer end of said second clip also terminating in an inwardly angled terminal end inclined toward said handle other end and terminating a spaced distance outwardly from said one side, said second clip being spaced from said bristles toward the end of said handle portion remote from said head, said second clip being adapted to clampingly engage a first marginal portion of a washcloth between the terminal end of said second clip and said one side of said structure and said first clip being adapted to clampingly engage a remote marginal portion of said washcloth between the terminal end of said first clip and said other side of said structure with the portions of said washcloth extending between the remote marginal portions thereof extending over the outer ends of said bristles and the end of said structure from which said head is supported.

4,184,222

CLEANING DEVICE

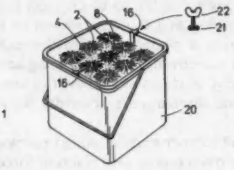
Cameron R. Wootten, Koheroa Rd. R.D. 2, Mercer, New Zealand

Filed Sep. 18, 1978, Ser. No. 943,220

Claims priority, application New Zealand, Feb. 11, 1977, 185605

Int. Cl.[2] A46B *11/00*

U.S. Cl. 15—164 **8 Claims**



1. A cleaning apparatus for cleaning the four cups, claws and claw tubes of a milking machine, the apparatus comprising nine elongated cleaning members; a substantially rigid frame, one end of each of said nine elongated cleaning members being immovably fixed to said frame with said members being substantially parallel to each other, forming a three-by-three, rectangular array and defining four distinct cavities forming a two-by-two rectangular array and into which cups of a milking machine can be placed so as to have their external surfaces cleaned; and an open-ended container, said frame with said members attached thereto being removably fixed to said container, whereby in use the four cups of a milking machine can be inserted simultaneously and respectively into the four cavities formed by the three-by-three array of elongated cleaning members.

4,184,223

SWEEPER BRISTLE ELEMENT

John G. Price, P.O. Box 3197, Montgomery, Ala. 36109

Filed May 25, 1978, Ser. No. 909,476

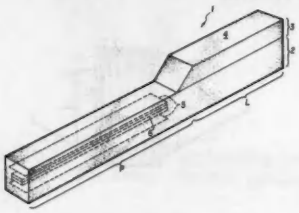
Int. Cl.[2] A46B *7/10, 13/02*

U.S. Cl. 15—179 **8 Claims**

1. A sweeper bristle element adapted for use on a railway roadbed or track cleaner employing a rotating drum with element support means, said sweeper bristle element comprising:

(a) a solid one-piece elastomeric stem extending substantially the length of said element, said stem having an upper portion and a lower portion with a forward surface terminating with a flat end portion; and

(b) a solid one-piece elastomeric substantially planar knob with a lower flat end portion, said knob being integral



with and laminated to said solid elastomeric stem, said knob attached to the forward surface of the lower portion of said stem, said flat end portion of the knob being aligned with said flat end portion of said stem, said knob forming a forward wearing and driving surface whereby said upper portion engages said element support means and rotation of said drum imparts a centrifugal force on said stem and especially said knob, causing loose material which contacts said knob to be driven away from element.

4,184,224

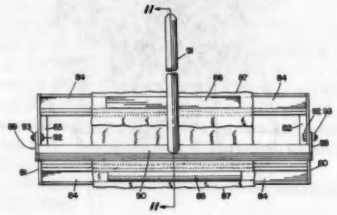
DEVICES FOR CLEANING, DUSTING, MOPPING AND APPLYING LIQUID TO FLOORS

Robert L. Joffre, 530 Parks Dr., Norton, Ohio 44203

Filed May 22, 1978, Ser. No. 908,123

Int. Cl.[2] A47L *13/256, 13/46*

U.S. Cl. 15—228 **5 Claims**



1. A device of the character described comprising a pair of longitudinally-spaced end plates, a pair of laterally-spaced cloth-retaining members interconnecting said end plates, said cloth-retaining members comprising channel shaped members consisting of a base and upstanding spaced flanges resiliently movable relatively to each other, a handle assembly removably connected to said end plates, a cloth supported by said cloth-retaining members, and means for securing portions of said cloth to said cloth-retaining members, said cloth adapted to apply a fluid to a surface upon which the cloth comes into contact.

4,184,225

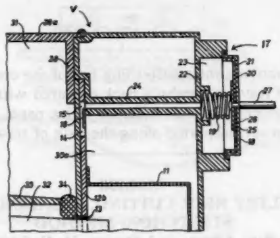
VACUUM CLEANER DUST BAG AND MOTOR DISCONNECT DEVICE

Karl E. Leinfelt, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Continuation-in-part of Ser. No. 840,420, Oct. 7, 1977, abandoned, and a continuation-in-part of Ser. No. 723,231, Sep. 15, 1976, abandoned. This application Jul. 14, 1978, Ser. No. 924,642

Int. Cl.[2] A47L 9/28

U.S. Cl. 15—339 5 Claims



1. The combination of a vacuum cleaner having a dust receptacle and a motor disconnect device for a vacuum cleaner motor, a conduit and an enclosure, comprising: an air-pervious bag-like part of said dust receptacle provided with an end plate of relatively rigid material, said end plate having an opening through which dust particles are drawn by said vacuum cleaner and into said bag-like part, and said end plate being provided with spaced openings and a connecting channel which together with said conduit and enclosure forms a flow path for air that creates a vacuum in said enclosure when said motor is in operative condition, said channel extending at least partly in the plane of said end plate and said vacuum in said enclosure acting on said motor disconnect device to maintain said motor in an operative condition when said dust receptacle is in place in said vacuum cleaner and to disconnect said motor from a power source when said dust receptacle is not in place in said vacuum cleaner and atmospheric air is present in said enclosure.

4,184,226

APPARATUS FOR DISCHARGING DRILLING DEBRIS, DRILLING DUST AND THE LIKE, MORE PARTICULARLY DURING THE DRILLING OPERATION IN THE CASE OF HAND DRILLING MACHINE

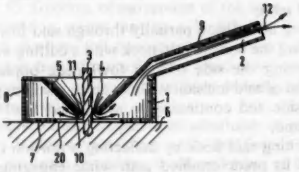
Norbert Loevenich, Kandinskystr. 27, D-8, Munich 71, Fed. Rep. of Germany

Filed Jan. 27, 1977, Ser. No. 763,015

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603330

Int. Cl.[2] A47L 9/02

U.S. Cl. 15—415 R 11 Claims



1. A device for use with a hand drilling apparatus having a drill bit for discharging the debris formed by drilling into an object, said device comprising:

(a) an enclosed chamber means having upper wall means, lower wall means and side wall means therebetween, said upper, lower and side wall means defining said enclosed chamber means, said enclosed chamber means being free of physical contact with said drilling apparatus, thereby allowing said drill bit to move axially and laterally without moving said chamber means, said chamber means having a first aperture in the top wall means thereof and a second aperture in the bottom wall means thereof, said chamber means positioned with respect to said drilling apparatus such that the second aperture of said chamber means is located over a borehole made by said drilling apparatus in the surface of the object, said bottom wall means of said chamber means including a sealing portion surrounding said second aperture wherein said drill bit is movable axially and laterally within the first and second apertures of said chamber means;

(b) vacuum means for reducing the pressure in said chamber means; and

(c) duct means for connecting said vacuum means to said chamber means, wherein said area of said first aperture is such that the flow cross-section for the ambient air drawn in through said inlet aperture with respect to the flow cross-section of said duct means is such that a negative pressure is maintained in said chamber means such that said sealing portion of said bottom wall means is sealed against the surface of said object and is held against the surface of said object surrounding the borehole by the negative pressure in cooperation with said sealing means and whereby the debris formed by the drilling collects in said chamber means and is withdrawn therefrom by said vacuum means through said duct means.

4,184,227

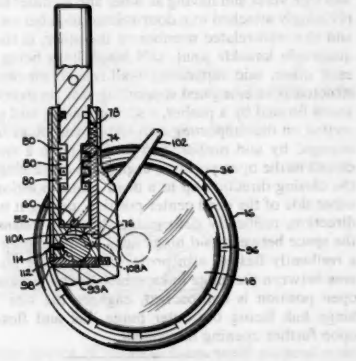
SANITARY CASTER

Robert L. Propst, 2347 Londonderry, and Paul L. Propst, 2490 Laurelwood, both of Ann Arbor, Mich. 48104

Filed Jun. 22, 1978, Ser. No. 917,783

Int. Cl.[2] B60B 33/00

U.S. Cl. 16—35 R 13 Claims



1. A caster comprising a caster body having an upright bore, a spindle member pivotally mounted in said bore for rotation about an upright axis relative to said caster body, said spindle member being adapted to be fixedly secured to a mobile unit, wheel means on said caster body, cooperating axle means on said caster body and on said wheel means at a preselected vertical position on said caster for rotatably mounting said wheel means on said caster body, brake means on said caster body movable into blocking relationship with said wheel means to prevent rotation of said wheel means, spindle lock means actuatable to prevent rotation of said spindle member relative to said caster body, and an operating member operable to selectively actuate said spindle lock means and said brake

means, said operating member including a handle portion movable to a plurality of pivoted positions and a shaft portion disposed in said caster body for rotation about a horizontal axis in response to pivotal movement of said handle portion, said shaft portion being positioned in said caster body at a position where the vertical height of said shaft portion is in close proximity to the vertical height of said axle means so that said handle portion is in an accessible location for foot operation between said pivoted positions, first coacting means on said shaft portion and on said brake means operable to actuate said brake means to a brake-applied position when said handle portion is moved to a first pivoted position, and second coacting means on said shaft portion and on said spindle lock means operable to actuate said spindle lock means to a spindle-locked position when said handle is in a second pivoted position.

4,184,228

QUADRUPLE KNUCKLE JOINT CABINET HINGE

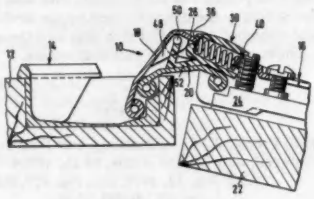
Karl Lautenschläger, Reinheim, and Gerhard Lautenschläger, Brensbach-Wersau, both of Fed. Rep. of Germany, assignors to Karl Lautenschläger KG, Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,456

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1977, 2708545

Int. Cl.[2] E05F *5/02*

U.S. Cl. 16—86 A **7 Claims**



1. A cabinet hinge movable from an open to a closed position and vice versa and having an inner and an outer hinge link each pivotingly attached to a door-related member on the one hand and to a wall-related member on the other, in the manner of a quadruple knuckle joint, said hinge links being spaced from each other, said supporting wall-related member being constructed as an elongated supporting arm, an over-center mechanism formed by a pusher, a spring biasing said pusher, a projection on the supporting arm end of said outer hinge link and engaged by said pusher, said pusher, upon a swing from the closed to the open position, urging the outer hinge link first in the closing direction up to a dead center position and, on the other side of the dead center position, urging it in the opening direction, resiliently deformable damping means disposed in the space between said hinge links, said damping means being a resiliently flexible arm projecting from the pusher into the area between the hinge links, which damping means, when the open position is approached, engages the side of the inner hinge link facing the outer hinge link and flexes resiliently upon further opening movement.

4,184,229

DEVICE FOR PROCESSING POULTRY BACKS

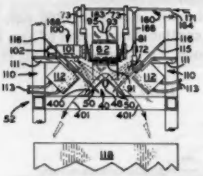
Robert L. Soran, Modesto, Calif., assignor to Beatrice Foods Co., Modesto, Calif.

Filed Mar. 6, 1978, Ser. No. 883,832

Int. Cl.[2] A22C *21/00*

U.S. Cl. 17—11 **8 Claims**

1. In a device for processing poultry backs or the like, each having a substantially concave surface, during transport along a path of travel, an improvement comprising a slide member extending along the path of travel having surfaces converging transversely of said path of travel; a conveyor having a transporting run disposed in spaced substantially parallel relation to the slide member and mounting a plurality of panels shaped for individual, substantially fitted engagement with portions of said backs, said panels extending toward the slide member; and



means for moving the transporting run of the conveyor along the path of travel whereby a back captured with its concave surface engaging the slide member and a panel in said fitted engagement is transported along the path of travel.

4,184,230

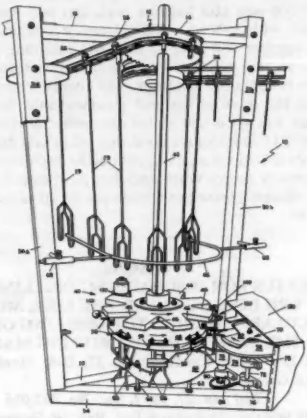
POULTRY NECK CUTTING, BREAKING AND STRETCHING METHOD

Gaston M. Fox, Albany, and Thomas H. Wright, Gainesville, both of Ga., assignors to U. S. Industries, Inc., New York, N.Y.

Division of Ser. No. 750,571, Dec. 14, 1976, Pat. No. 4,091,503. This application Nov. 7, 1977, Ser. No. 848,790

Int. Cl.[2] A22C *21/00*

U.S. Cl. 17—52 **10 Claims**



1. A method for processing poultry comprising the steps of:

(1) suspending a fowl with its neck down;

(2) holding and positioning at least the neck of said suspended fowl while moving the fowl along a predetermined path;

(3) cutting an incision partially through said fowl neck and breaking the bone in said neck with a cutting means while supporting the side of said fowl neck opposite to the position of said incision without cutting said opposite fowl neck side and continuing to move said fowl along said path; and,

(4) stretching said neck by deflecting a portion of the fowl out of its predetermined path while engaging said fowl with a rigid, stretching member extending transversely at least partially across said path of said fowl and holding portions of said fowl above and below said stretching member and continuing to move said fowl along said path to open said incision and separate said broken bone in said

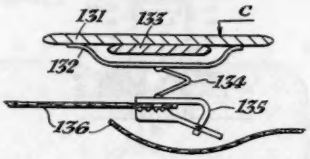
fowl neck whereby said fowl is prepared for withdrawal of its windpipe, esophagus and crop through said incision.

4,184,231

FOUR IN HAND NECKTIE WITH INTEGRAL CLASP

Yehuda A. Konnaa, 407 Marlin Dr., North Palm Beach, Fla. 33408

Filed Jul. 11, 1977, Ser. No. 814,266
Int. Cl.[2] A41D *25/10*
U.S. Cl. 24—49 R **2 Claims**



1. A four-in-hand necktie comprising:

a necktie clasp,

a wide end portion having a front and back, a mid portion and a narrow end portion positioned along a longitudinal center line, and

a wide holding ribbon having a front and back permanently fixed to said back of said wide end portion between the distal end of said wide end portion and said mid portion where the four-in-hand knot is located, said holding ribbon transversely positionable for holding said narrow end portion between said back of said holding ribbon and said back of said wide end portion when the four-in-hand knot is completed,

said necktie clasp includes,

an attaching means connected to said holding ribbon,

a releasable concealed clamp means not visable from the front of the necktie,

a relatively short, narrow, transversely flexible connecting means having one end permanently fixed to said attaching means and a second end permanently fixed to said clamp means, said connecting means of a length long enough for allowing head and body movement of the tie wearer when said clamp means is connected to a shirt, and said connecting means of a length short enough for holding said four-in-hand necktie close to the shirt when the tie wearer bends over, said second end moveable above, below and away from said one end,

said clamp means for removably connecting said necktie clasp to a shirt at the approximately same vertical position of said attaching means on said holding ribbon when the user's head, neck and upper trunk is positioned in a normal mid upright position for allowing movement of said necktie and holding ribbon directly away from and vertically up and down from said position of said clamp means on the shirt a distance equal to the length of said connecting means for freedom of movement of the user,

said connecting means having a length that is just long enough to allow full movement of the user's head, neck and upper trunk from a forward head down position to a rearward head up position without placing said connection means in tension,

said clamp sized and shaped to be attachable to said holding ribbon without interfering with the four-in-hand knot while putting it on, taking it off, and tying or untying the four-in-hand knot,

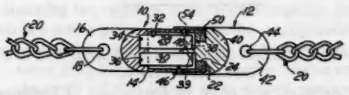
said necktie clasp sized and shaped to allow the four-in-hand knot to be tied and untied without removal of said necktie clasp and without interferring with the four-in-hand knot while putting on and taking off the four-in-hand necktie with said clamp means attached to said holding ribbon.

4,184,232

COUPLING

Andre Marosy, 16249 Hilton, Southfield, Mich. 48075

Filed May 15, 1978, Ser. No. 905,514
Int. Cl.[2] A44B *17/00*
U.S. Cl. 24—201 A **4 Claims**



1. A coupling comprising a male and a female members, said male member comprising an end having a generally T-shaped member and said female member comprising a housing having a cavity closed by an end plate, a slot through said end plate accepting said T-shaped member of said male member, and spring bias means within said cavity urging said T-shaped member in rotation relative to said slot for locking said T-shaped member in said cavity below said end plate out of registry with said slot, wherein said T-shaped member comprises a substantially rectangular tongue member supported by a cylindrical base and the end plate of said female member comprises a circular aperture having a diameter slightly larger than the diameter of said cylindrical base, and wherein said spring bias means comprises a pair of substantially co-planar separate spring blades extending longitudinally in said housing and having an end fastened at the bottom of said cavity in said housing, each of said spring blades having a free end extending proximate said end plate substantially in registry with said slot, an inclined tapered camming surface at said spring blade free end facilitating introduction of said tongue member between said free ends and deflecting one of said spring blades in one direction and the other of said spring blades in an opposite direction for causing one of said spring blades to engage said tongue member on one side and the other to engage said tongue member on the other side when deflected in said opposite directions with said tongue member introduced through said slot.

4,184,233

FABRIC CLASP DEVICE

Samuel O. Jacobson, 11255 Gaviota Ave., Granada Hills, Calif. 91344

Filed May 24, 1978, Ser. No. 908,949
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—261 R **10 Claims**

1. A clasping device of resilient filamentoid material comprising:

(a) a first clip having a first elongated coplanar convolution with first and second spaced side legs and a third adjacent, rearwardly directed side leg for clipping a hem-like portion of folded fabric;

(b) a second longer clip integrally connected to said first clip and reversely positioned to be substantially parallel to, laterally rearward of, and adjacent said first clip, said second clip for clasping said folded fabric and formed by

(1) a second elongated convolution having a fourth side leg of S-like shape connecting at one end to

(2) one end of a fifth side leg, said fifth side leg's other end integrally connected by an outwardly extending, circular loop to

(3) a third convolution having a sixth side leg, a curvature,

and a seventh terminating side leg, said third convolution surrounding said second convolution;

(c) means for pivoting said first clip, containing said hem-like portion therewithin, rearward of said third convolution;

(d) means for pivoting said enclasped and folded fabric around said fifth side leg and hooking said seventh side leg within said loop.

4,184,234

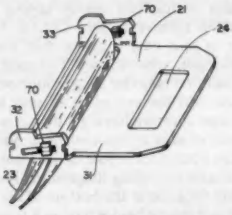
ANTI-CREEP SEAT BELT BUCKLE AND TONGUE COMBINATION

James R. Anthony, and Allan R. Lortz, both of Indianapolis, Ind., assignors to Indiana Mills & Manufacturing Inc., Carmel, Ind.

Filed Sep. 18, 1978, Ser. No. 942,938

Int. Cl.[2] A44B *11/06, 11/10*

U.S. Cl. 24—196 **7 Claims**



1. In a device for restraining movement of a person with said device including a frame and a roller bar movably mounted on said frame, a web extending around said bar, said web having a first end portion to anchor said web, wherein the improvement comprises:

said frame including stop means contactable against said web operable to limit movement of said web relative to said bar;

biasing means mounted on said frame and operably engaged with said bar being operable to normally urge said bar toward said stop means and said web against said stop means but being yieldable upon application of a certain force to allow movement of said bar from said stop means and movement of said web relative to said bar, said frame includes a wall with a slot extending through said wall in which said bar is slidably mounted, said biasing means includes a spring urging said bar toward one end of said slot, said spring is located in said slot, said biasing means includes retaining means securing said spring in said slot; and

said retaining means includes a clip with a pair of spaced apart legs, said legs include proximal ends attached together, said legs extend through said slot and wall with said spring located and retained between said legs.

4,184,235

APPARATUS FOR SHAPING ANODES

Masaharu Ono, Tokyo; Hirofumi Kurokawa, Koganei; Kimio Yoshida, Osaka; Tadashi Itado, Osaka, and Yasuhiro Uchihara, Osaka, all of Japan, assignors to Sumitomo Metal Mining Co., Tokyo and Fuji Sangjo Co., Ltd., Osaka, both of, Japan

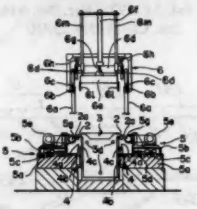
Continuation-in-part of Ser. No. 781,342, Mar. 25, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,587

Claims priority, application Japan, Feb. 15, 1977, 52-15393

Int. Cl.[2] B23P *23/00*; B23D *7/08*

U.S. Cl. 29—33 R **10 Claims**

1. An apparatus for shaping anodes for electrolytic refining comprising flat plates having support ears extending outwardly of a top edge and opposite side edges thereof, the apparatus comprising, a receptacle having a plurality of spaced vertical walls open at the top thereof and disposed parallel to one another for the reception of the plates betwen said walls, said walls having a predetermined width permitting the support ears of the plates to extend outwardly of opposing side edges thereof, means on said walls for clamping the plates against vertical surfaces of said walls, means including cutters movable toward and away from said opposing side edges of



said walls for shaping undersurfaces of the support ears, and means for transferring the plates into said receptacle for being shaped and for transferring the shaped plates from said receptacle, means supporting said transferring means above said receptacle for vertical movement toward and away therefrom and for horizontal movement perpendicular to said walls.

4,184,236

ASSEMBLY MACHINE

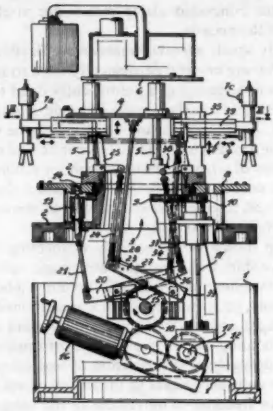
Helmut Nutt, Bevaix, Switzerland, assignor to Mikron Haesler S.A., Boudry, Switzerland

Filed May 1, 1978, Ser. No. 901,832

Claims priority, application Switzerland, May 26, 1977, 6482/77

Int. Cl.[2] B23P *19/04*

U.S. Cl. 29—38 R **3 Claims**



1. An assembly machine comprising a stationary frame, a table fixed to the frame and having a central opening, a camshaft journaled for rotation in the frame below the table and extending diametrally across said opening, a horizontal annular plate mounted for rotation on and relative to said table and surrounding said opening, a plurality of vertical columns rigidly supported by the frame, a sliding plate slidably mounted on the columns for vertical movement relative to the frame, working units mounted on the sliding plate and on the table for assembling articles of manufacture thereon, a plurality of cams on the cam-shaft, mechanical linkages supported by said frame and extending between said cams and said working units and said sliding plate, at least some of said mechanical linkages

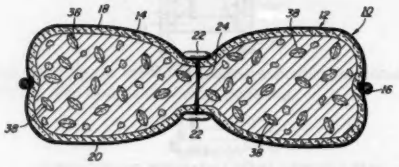
extending through said opening, and means connected to said cam shaft to rotate said cam-shaft thereby to operate said mechanical linkages to actuate said working units and to raise and lower said sliding plate.

4,184,237

METHOD OF MAKING A CUSHION CONSTRUCTION

James O. Blankenship, Tupelo, Miss., assignor to Sofisti-Caire Furniture Mfg. Inc., Baldyn, Miss.

Filed Aug. 31, 1978, Ser. No. 938,378
Int. Cl.[2] B68G *7/00*
U.S. Cl. 29—91.1 **7 Claims**



1. A method of making a seat cushion, comprising the steps of

making a cushion cover of upholstery material, forming a porous bag with an opening,

filling said bag with a mixture of pieces of shredded polyurethane foam and pieces of polyester fiber matting, securing said bag opening closed and

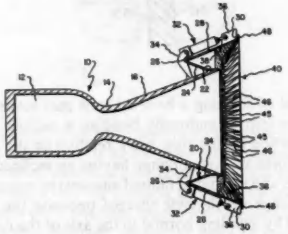
inserting said filled bag into said cushion cover.

4,184,238

METHOD OF MAKING AN EXTENDIBLE/EXPANDABLE NOZZLE FOR ROCKET ENGINES

Lee F. Carey, North Tonawanda, N.Y., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 637,405, Dec. 3, 1975, abandoned. This application Jun. 24, 1977, Ser. No. 809,549
Int. Cl.[2] B23P *15/00*; B21D *53/92*; B64C *15/06*
U.S. Cl. 29—157 C **6 Claims**



1. The method of fabricating a skirt-like device for attachment to the exit end of a rocket engine nozzle, said device being initially folded for compact stowage relative to the engine nozzle and adapted to unfold upon engine firing for increasing both the length and exit end diameter/area of the effective nozzle/skirt combination, said method comprising:

a. cutting a workpiece of thin sheet heat-resistant ductile material into plan view arcuate form of such configuration that the workpiece is then adapted to be creased and pleatfolded whereupon the opposite ends of the workpiece meet to be fixed together to provide a skirt-like device which when unfolded and extended is of frustoconical form;

b. deforming said workpiece so as to include suitable creases therein running generally transversely of the workpiece sequentially of the length of the workpiece, said creases being alternately directed in opposite directions with the inwardly directed creases being arranged in converging pairs, each converging pair being separated from the next pair by a single outwardly directed crease;

c. progressively pleat-folding the workpiece from one end thereof to the other, and then;

d. fastening the opposite ends thereof together to form the device into a generally flat annular configuration;

whereby the device is adapted to be attached along its outer periphery to the exit end of an engine nozzle with the body of the device in a stowed position relative thereto occupying no substantial space outside of the engine nozzle;

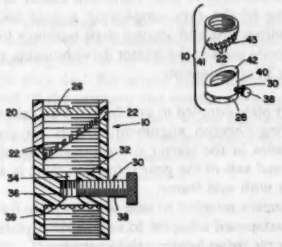
whereby upon engine firing, the device may deploy to provide an effective engine nozzle/skirt combination of increased length and exit diameter/area.

4,184,239

METHOD OF WORKING AN ADJUSTABLE SPRINKLER HEAD

Roger B. Clawson, 1752 Joel Way, Los Altos, Calif. 94022

Division of Ser. No. 776,640, Mar. 11, 1976, Pat. No. 4,154,404. This application Mar. 10, 1978, Ser. No. 885,179
Int. Cl.[2] B23P *15/00*; B05B *1/02*
U.S. Cl. 29—157 C **3 Claims**



1. The method of making a sprinkler head comprising the steps of:

(a) fabricating a first tubular body portion having a given axis and given internal and external cross-sectional dimensions with means for introducing fluid under pressure into one end thereof and its other end terminating in a plane extending at a given angle to said given axis;

(b) fabricating a second tubular body portion having a given axis and the same given internal and external cross-sectional dimensions as said first tubular body portion with one end thereof terminating in a plane extending at said given angle to said given axis;

(c) providing a plurality of radially extending grooves in one of said other end of said first tubular body portion and said one end of said second tubular body portion;

(d) welding said other end of said first tubular body portion to said one end of said second tubular body portion whereby a tubular body is formed having said given axis and said grooves provide an array of a plurality of spaced apertures through the wall thereof defining a plane extending at said given angle to said given axis;

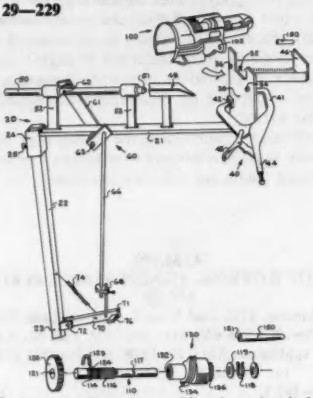
(e) fabricating a diaphragm having external cross-sectional dimensions corresponding to said given internal cross-sectional dimensions of said tubular body; and

(f) mounting said diaphragm within said tubular body for selective movement along said given axis from one of said first and said second tubular body portions thereof to the other.

4,184,240
APPARATUS AND METHOD FOR ASSEMBLING AUTOMOTIVE GEAR REDUCTION STARTER DRIVE ASSEMBLY

Thomas M. Donahoe, 1604 S. Waverly Pl., Melbourne, Fla. 32935

Filed Mar. 17, 1978, Ser. No. 887,819
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—229 8 Claims



1. A foot-actuated press assembly adapted to hold and operate upon an automotive gear reduction starter drive assembly and housing of the type employing a gear reduction shaft rotatable within first and second shaft bushings located generally at opposite ends of the starter drive housing, said assembly comprising in combination:

a frame;

a support plate coupled to said frame, with said support plate including thereon alignment dowels for coupling with bolt holes in the starter drive housing so as to locate a rotational axis of the gear reduction shaft in known registration with said frame;

locking means coupled to said support plate for being movably juxtaposed adjacent to said support plate for locking the starter drive housing therebetween;

plunger rod means movably coupled to said frame in known registration with said alignment dowels for operatively coupling with and exerting an axial pressure upon the gear reduction shaft in a direction toward said support plate; and

foot actuated means coupled to said frame and said plunger rod means for being depressed by the foot of the operator for forcing said plunger rod means into communication with a first end of the gear reduction shaft, thereby forcing said gear reduction shaft through the shaft bushings.

4,184,241
APPLICATOR FOR AFFIXING A MEMBRANE TO A SENSOR

Alphons Günther; Karl-Heinz Pomorin, both of Freiburg; Hans P. Spiess, Umkirch, and Georg J. Ullrich, Freiburg, all of Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg, Fed. Rep. of Germany

Filed Jan. 13, 1978, Ser. No. 869,352
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1977, 7701259[U]
Int. Cl.[2] B25B *27/14*
U.S. Cl. 29—278 7 Claims

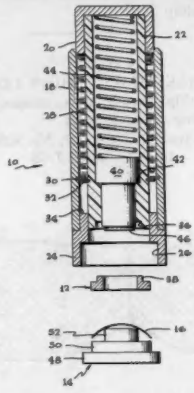
1. An applicator for affixing a membrane to a sensor by means of a clamping ring, comprising:

a housing member;

guide means mounted to the housing member for motion relative thereto for urging the clamping ring against the membrane and onto the sensor;

a return spring for opposing said relative motion;

a pad; and

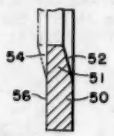


means, mounted for motion with the guide means, for urging the pad against a portion of the membrane not contacted by the clamping ring against the sensor with a constant pressure.

4,184,242
BEVELED RETAINING RING AND METHOD FOR CONSTRUCTING THE SAME

John A. Petrie, 431 Brainard Pl., Bldg. 29001 Cedar Rd., Cleveland, Ohio 44124

Filed Mar. 2, 1978, Ser. No. 882,637
Int. Cl.[2] B21D *53/16, 53/36*
U.S. Cl. 29—400 R 11 Claims



1. A method of forming a beveled split part retaining ring comprising the step of uniformly bending a radially inner or outer edge portion of the ring body relative to the plane of such body to form a beveled flange having an inclined groove seating surface, and removing limited amounts of material from the beveled flange on the side thereof opposite the inclined seating surface by grinding normal to the axis of the ring body.

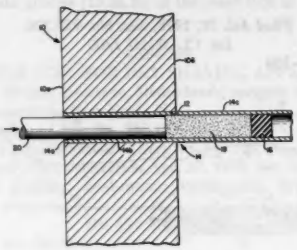
4,184,243
METHOD FOR REMOVING TUBES FROM A TUBESHEET

Joseph W. Schroeder, Clark, and Myron T. Krawchuk, Newton, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Oct. 17, 1978, Ser. No. 952,178
Int. Cl.[2] B23P *19/02*
U.S. Cl. 29—427 6 Claims

1. A method for removing a tube from an opening in a tubesheet, comprising the steps of placing a plug in the tube at a predetermined distance from the end of the tube that extends into the tubesheet opening, placing a granular material into at least a portion of that portion of the tube extending between

said plug and said tube end, and applying a force to said granular material sufficient to cause said granular material to exert a



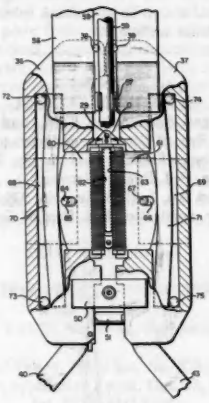
shear force on the inner wall of said tube of a magnitude to push the tube from said tubesheet opening.

4,184,244

CONDUCTOR TERMINATING APPARATUS

Leonard J. Kaczmarek, Wonder Lake, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Apr. 26, 1978, Ser. No. 900,229
Int. Cl.[2] H01R *43/04*
U.S. Cl. 29—566.3 **6 Claims**



1. In an apparatus for simultaneously terminating a plurality of insulated conductors in at least one row of insulation piercing contacts of an electrical connector, said apparatus being of the type having means for locating and holding said electrical connector in a fixed position, means for positioning said insulated conductors adjacent respective ones of said insulation piercing contacts, termination means for terminating said insulated conductors in said insulation piercing contacts when force is applied thereto, and means for appling force to said termination means, the improvement comprising:

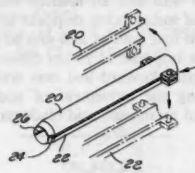
resilient means operatively associated with said termination means and said force applying means so that said force applying means and said termination means automatically apply precise and uniform termination forces to each of said insulated conductors to assure proper termination of said insulation piercing contacts regardless of the transverse dimension of said connector, said resilient means comprising an elongated, unitary spring bar supported adjacent its ends by said force applying means and effectively applying forces intermediate its ends to said termination means.

4,184,245

REMOVAL TOOL AND METHOD OF USING

William R. Mattingly, Jr., Santa Ana, Calif., assignor to Matrix Science Corporation, Torrance, Calif.

Filed Aug. 31, 1978, Ser. No. 938,586
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—629 **5 Claims**



1. A removal tool for removing a contact, circumferentially attached to the end of a wire, from an insulator passageway defining an interior cylindrical passageway having a first diameter and a connecting cylindrical passageway having a second diameter, where the first diameter is larger than the second diameter, the contact having a retaining end with an elliptical cross section where the minor inside diameter of the elliptical cross section is at least as large as the diameter of the wire and the major outside diameter of the elliptical cross section is greater than the second diameter for retaining the contact in the interior cylindrical passageway, the removal tool comprising:

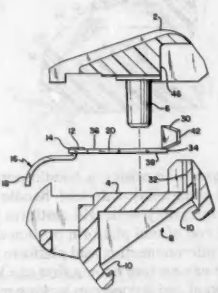
a tube having a chamfered end for being slidably positioned around the wire with the chamfered end positioned adjacent the retaining end of the contact for being inserted between the wire and the minor inside diameter of the retaining end of the contact, the outside diameter of the tube being greater than the minor inside diameter of the elliptical cross section of the retaining end of the contact and smaller than the second diameter.

4,184,246

SHAVING UNIT

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jul. 24, 1978, Ser. No. 927,481
Int. Cl.[2] B26B *21/22*
U.S. Cl. 30—47 **4 Claims**



1. A shaving unit comprising cap means, first platform means, said cap means being permanently joined to said first platform means, said first platform means having a connector portion for connection of said unit to a razor handle, blade means, and guard means, said guard means comprising a guard portion for engaging the skin ahead of a cutting edge of said blade means and a second platform portion, said guard portion extending from said second platform portion, said blade means

and said guard means permanently joined and disposed between said cap means and said first platform means, said blade means and said second platform portion being slidably movable in unison relative to and between said cap means and said first platform means, and a leaf spring fixed to said second platform portion proximate a rearward edge of said second platform portion and upstanding therefrom, said unit having an internal forward wall and an internal rear wall forming a chamber, said leaf spring being disposed in said chamber and engaged with said rear wall of said unit to provide a resilient restoring force in response to forces transmitted to said unit during shaving, said forward and rear walls providing stop means for limiting the movement of said leaf spring and thereby said guard means and said blade means.

4,184,247

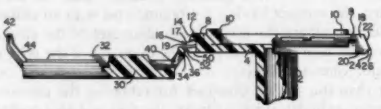
SAFETY RAZOR

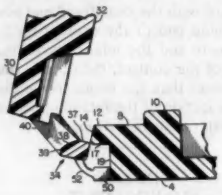
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.

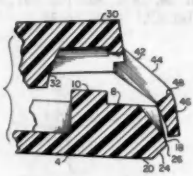
Filed Sep. 7, 1978, Ser. No. 940,391

Int. Cl.² B26B *21/14*

U.S. Cl. 30—59 **10 Claims**







1. A safety razor comprising a handle portion, a platform portion molded integrally with said handle portion, a cap portion molded integrally with said platform portion, a hinge portion at a first end of said platform portion and a first end of said cap portion interconnecting said platform portion and said cap portion, said cap portion having first cap locking means at said first end thereof and second cap locking means at a second end thereof, said platform portion having first platform locking means at said first end thereof and second platform locking means at a second end thereof, said cap portion being adapted by flexure of said hinge portion to overlie said platform portion, said first cap locking means being engageable with said first platform locking means to securely fasten said first cap end to said first platform end, and said second cap locking means being engageable with said second platform locking means to securely fasten said second cap end to said second platform end.

4,184,248

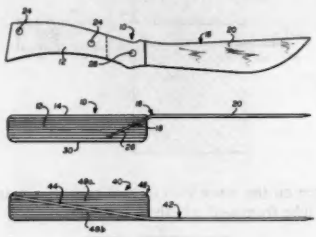
FISHING KNIFE

Henry S. Wolfe, 314 Harbor View La., Harbor Bluff Largo, Fla. 33540

Filed Jul. 31, 1978, Ser. No. 929,226

Int. Cl.² B25G *1/00*

U.S. Cl. 30—340 **6 Claims**



1. A fishing knife comprising:

a blade including a shank and a connected tang in angular relationship with said shank; and

a handle having a substantially planar surface, said handle having a slot therein extending in the same angular relationship with the plane of said planar surface as that of said tang with said shank such that said tang is secured to said handle in said slot with said shank substantially coplanar with said planar surface.

4,184,249

SCISSORS-LIKE TOOL

Salvatori G. Megna, Sacramento, Calif., and Günther Pracht, Solingen, Fed. Rep. of Germany, assignors to "Jaguar" Stahlwaren Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft, Solingen, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 939,019

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811398

Int. Cl.² B26B *13/20*

U.S. Cl. 30—341 **4 Claims**

1. A scissors-like tool, in particular a hairdressers', householding or tailors' scissors, including a movable scissors blade, a stationary scissors blade pivotally connected thereto, and finger bows made of resilient synthetic material or the like arranged in outwardly directed fork openings at the rearward end of the scissors, comprising

(a) a movable scissors blade (3,3',3") pivotally connected to a stationary scissors blade (1) with a finger bow (4,14;17;2) made of resilient synthetic material or the like and fitted through the intermediary of a hollow cylinder shank (11,11',11";6) to the respective stock portions (12;7) of the blades to form handles for the scissors, and

(b) a fork (8,8',8") having prongs (9,10;9',10';9",10") defining

an outwardly directed fork opening on at least one of said handles for holding one of the finger bows, the finger bow of said one handle being mounted easily rotatable in an arcuate groove (13,16,20) at the inner side of said fork.

4,184,250

CUTTER FOIL FOR DRY SHAVING APPARATUS

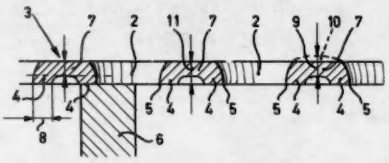
Albert J. Meijer, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 753,182, Dec. 22, 1976, abandoned, which is a continuation of Ser. No. 607,794, Aug. 26, 1975, abandoned. This application Apr. 10, 1978, Ser. No. 894,755

Claims priority, application Netherlands, Sep. 2, 1974, 7411603

Int. Cl.² B26B *19/04*

U.S. Cl. 30—346.51 **1 Claim**



1. A flexible cutter foil for use in a dry shaver, which comprises a metal plate having an outer surface and a parallel, opposite inner surface, a plurality of spaced apertures extending through said plate from said outer surface to said inner surface, plate partitions respectively separating adjacent apertures from each other, and walls respectively surrounding said apertures and formed integrally with said plate and projecting substantially perpendicular from the inner surface of said plate, said plate and walls consisting of a unitary structure formed solely from a single metallic material, the inner end of each surrounding wall being formed as a cutting edge, and the distance between the outer surface and the parallel, inner surface of said plate partitions being less than the distance between the opposite surfaces of said surrounding walls.

4,184,251

INSTRUMENT FOR PROCESSING ARTIFICIAL TEETH AND THE LIKE

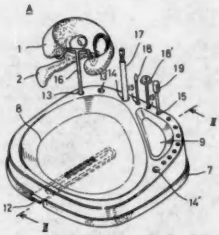
Tamotsu Kuboki, 1-14-27, Nishifuna, Funabashi-shi, Chiba-ken, Japan

Filed Feb. 6, 1978, Ser. No. 875,136

Claims priority, application Japan, Oct. 13, 1977, 52/121846

Int. Cl.² A61C *3/06*

U.S. Cl. 433—29 **9 Claims**



1. An instrument for processing artificial teeth and the like, which comprises a mitten-like collector and a collector plate, said mitten-like collector having a bowl-like configuration provided with a tubular projection for receiving the thumb therethrough, and said collector plate having a means for mounting thereabove the aforementioned mitten-like collector and having a basin for supplementally collecting thereupon powders produced in the processing the teeth.

4,184,252

OVERDENTURE AND METHOD FOR SECURING SAME

Arthur J. Krol, 600 21st Ave., San Francisco, Calif. 94121, and Tomas C. Pablos, San Francisco, Calif., assignors to Arthur J. Krol, San Francisco, Calif.

Filed Nov. 18, 1977, Ser. No. 853,004

Int. Cl.² A61C *13/00*

U.S. Cl. 433—172 **8 Claims**

1. An improved overdenture wherein the improvement comprises a first material secured to the overdenture at locations where said overdenture is adapted to be in direct physical contact with a second surface contoured material partially embedded in and extending between at least two natural teeth, wherein said first material and said second material are magnetically attractive to one another, the outer surface of said first material being contoured to mate with that portion of the contoured surface of the second material that extends between said at least two natural teeth.

4,184,253

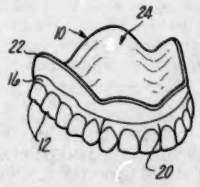
DENTURE AND METHOD OF PRODUCING AND FITTING

Kenneth E. Tureaud, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 12, 1977, Ser. No. 859,611

Int. Cl.² A61C *13/00*

U.S. Cl. 433—171 **12 Claims**



1. A denture preform device comprising:

a plurality of prosthetic teeth corresponding in shape and position to human maxillary and mandibular dentition, said prosthetic teeth being arranged into two groups, each comprised of a set of posterior prosthetic teeth molded into a hard base structure segment of hard base material;

a soft deflectably formable liner layer having posterior margins and an anterior margin therebetween, said margins defining an arch generally parallel to posterior and anterior teeth, the posterior margins being bonded to said hard base structure segments and said liner layer having periph-

eral flange areas in general conformance with human edentulous tissue;

at least one cavity formed in said deflectably formable liner layer, the cavity being located at said anterior margin intermediate said hard base structure segments and being filled with a mass of deflectably formable material;

a plurality of anterior prosthetic teeth corresponding in shape to human dentition, embedded into said deflectably formable material in positions corresponding to human dentition, whereby the position of said anterior prosthetic teeth is adjustable in final fitting and said teeth after removal can be precisely repositioned with respect to the denture preform by location on the adjacent posterior segments and the anterior margin of said liner layer;

said material filling said cavity being removable from said cavity for casting in of a permanent hard base structure about said anterior teeth.

4,184,254

PROCESS OF ELECTRO-ERODING CHANNELS IN MULTIPLE BUCCAL TUBE DEVICE

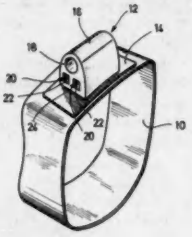
Hans J. Kraus, Waldbronn, Fed. Rep. of Germany, assignor to Dentaurum Hans-Peter Winkelstroeter KG, Ispringen, Fed. Rep. of Germany

Filed Apr. 7, 1977, Ser. No. 785,557

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616767

Int. Cl.[2] B23P *1/00, 1/04;* A61C *7/00*

U.S. Cl. 433—17 **5 Claims**



1. A multiple buccal tube device having an integral body with a base for attachment to annular tooth band and several channels formed in said body, the improvement comprising at least one of said channels having a non-circular cross-section with several corners, said non-circular channel being formed by an electroerosion process using an electrode of corresponding cross-section and wherein the inner walls of said non-circular cross-sectional channel bounded by said corners and facing said base extend at an incline with respect to said base.

4,184,255

APPARATUS FOR AND METHOD OF FORMING ACCURATE HINGE AXIS TOOTH POSITIONERS

Woodford W. Gordon, 945 Corbett Ave. #309, San Francisco, Calif. 94131

Filed Jun. 3, 1977, Ser. No. 803,221

Int. Cl.[2] A61C *7/00*

U.S. Cl. 433—6 **4 Claims**

1. A method of constructing an accurate hinge axis tooth positioner comprising:

(a) preparing models of the upper and lower teeth of a patient with the teeth relocated to predetermined positions;

(b) taking a centric interocclusal record of the prepared models mounted on an articulator in the centric relation but spaced apart the thickness of the tooth positioner material;

(c) duplicating the said models;

(d) mounting said duplicated models on a correlator in indexed engagement with said interocclusal record;

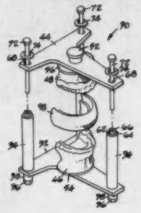
(e) removing said interocclusal record from between said duplicated models;

(f) disposing resilient deformable material between said duplicated models;

(g) returning said duplicated models to the established interocclusal record position forming impressions of the upper and lower teeth in said material; and

(h) curing said material through the application of heat to provide an accurate hinge axis tooth positioner.

3. A correlator for reproducing onto a tooth positioner material the exact centric interocclusal record taken from opposing set-up models mounted on an articulator comprising:



(a) a lower frame member having a plurality of perpendicular posts upstanding therefrom, each post having a reduced top portion;

(b) an upper frame member having aligned apertures sized to fit over said posts;

(c) means on said frame members for securing opposing set-up models thereto;

(d) bevel cooperating means on said posts and on the underside of said upper frame member for positioning said upper frame member onto said posts; and

(e) tightening means on said posts for locking said upper frame member in place on said posts whereby all torque, twisting and bending is eliminated and the exact centric interocclusal record taken from opposing set-up models can be reproduced onto a tooth positioner material.

4,184,256

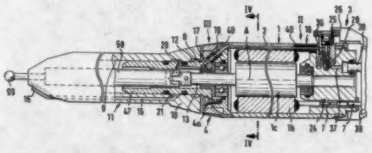
MINIATURE MOTOR HAVING AN INTERNAL COOLANT LINE

Hans Loge, and Gerd Lohn, both of Biberach an der Riss, Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,952

Int. Cl.[2] A61C *1/08*

U.S. Cl. 433—82 **12 Claims**



1. A miniature motor for driving a hand-held instrument, comprising: an internal coolant line extending from one end of the motor to the other end of the motor, said internal coolant line having an inlet and an outlet located near said one end and said other end, respectively; a connecting member having connector elements for supplying coolant to said inlet and energy to said motor; a coupling member arranged on said other end of said motor; a motor shaft projecting from said other end of said motor and having a driving end; said coupling

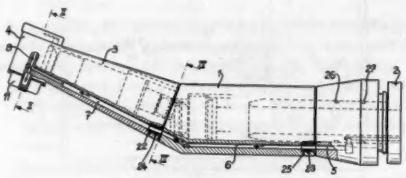
member having coupling elements for detachable connection to a hand-held instrument having a driveshaft for driving a tool connected to said instrument; a coolant line leading to said tool and sealingly connectable to said outlet, said coolant line comprising at least one tubular member removably located in said motor; an intermediate coolant line; said tubular member having an entry end connected to one of said connector elements for supplying coolant and an exit end for detachably connecting to an entry end of said intermediate coolant line; plug-in connection means for connecting said intermediate coolant line to said coolant line; said plug-in connection means being arranged in a holder removable in the direction of said tubular member passing through said motor and providing access to said tubular member after removal; a flexible connecting tube slid over said entry end and said exit end of said tubular member and a discharge end of said connector element for supplying coolant and said entry end of said intermediate coolant line in said coupling member.

4,184,257

DENTAL HANDPIECE

Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., France

Filed Jan. 5, 1978, Ser. No. 867,101
Claims priority, application France, Jan. 26, 1977, 77 02685
Int. Cl.[2] A61C *13/22*
U.S. Cl. 433—82 **8 Claims**



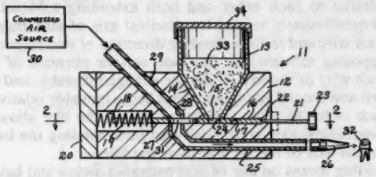
1. Dental handpiece comprising at least two interconnected sections, namely a rear section and a front section forming a contra-angle with said rear section, said front section having at its forward end an integral tool-holding head portion disposed at right angles to the longitudinal axis of said front section and including a tool-clamping shaft, said head portion having an annular internal chamber formed around said tool-clamping shaft and an internal longitudinal passage extending from said annular chamber longitudinally of the axis of said tool-clamping shaft, said sections having formed in the walls thereof an internal fluid supply passageway extending from said longitudinal passage to the rear end of said rear section to supply fluid to said annular chamber, said passageway being eccentric of the longitudinal axis of said sections and a portion of said passageway in one of said sections adjacent the junction between said section being enlarged to form a recess, a tubular seal received in said recess and having a length slightly greater than the depth of said recess whereby said seal projects slightly from the end face of the respective section and tightly engages the abutting end face of the adjacent section to provide a fluid-tight seal and said head portion having small orifices opening from said annular chamber to the front face of said head portion around said tool-clamping shaft for directing liquid jets toward a tool carried externally of said head portion by said clamping shaft.

4,184,258

POWDER BLOWER DEVICE

James E. Barrington, Woburn; David L. Williams, Reading; Charles J. Hitchcock, Cambridge, and Thomas J. Mullins, Woburn, all of Mass., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jan. 30, 1978, Ser. No. 873,704
Int. Cl.[2] A61C *17/00*
U.S. Cl. 433—88 **10 Claims**



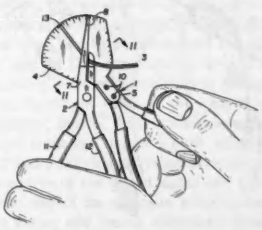
1. A therapeutic air/powder suspension spraying device for dental treatments comprising a handpiece in the form of a housing, powder reservoir means to contain a dental treatment powder in dry form, said reservoir means being mounted on said housing and having a bottom discharge orifice, a shuttle bar slidably mounted in a close-fit manner in said housing subjacent said orifice, said shuttle bar having a metering aperture registrable with said orifice to receive a metered volume of dry powder, means biasing said shuttle bar in a first position, means to reciprocate said shuttle bar between said first position and a second position, means in said housing substantially sealing the metering aperture against leakage during the filling thereof and the reciprocatory movement of the shuttle bar, means to deliver pressurized air comprising an air delivery conduit means in said housing opening at one side of said shuttle bar, discharge conduit means in said housing opening at the opposite side of said shuttle bar in alignment with said air delivery conduit means, said air delivery and discharge conduit means being offset from the reservoir bottom discharge orifice but aligned with the reciprocatory path of movement of said metering aperture, a compressed air source connected to said air delivery conduit means, and powder-guiding nozzle means connected to said discharge conduit means to direct powder to the teeth, to restrict the size of the spray area and to control the ejection velocity of the air/powder suspension.

4,184,259

ORTHODONTIC TOOL FOR PLACING TWISTS IN ARCH WIRES

Alan J. Sosnay, 55 E. 9th St., New York, N.Y. 10003

Filed Jun. 13, 1977, Ser. No. 805,749
Int. Cl.[2] A61C *7/00*
U.S. Cl. 433—4 **27 Claims**



1. An orthodontic tool for placing and measuring twists in an arch wire, or the like, the arch wire having a longitudinal axis and at least two opposing substantially flat side surface portions extending along said longitudinal axis, said twists being made about said longitudinal axis, within the boundaries of said

opposing substantially flat side surface portions, the tool comprising:

first engaging means for engaging opposing substantially flat side surface portions of said arch wire or the like, and being substantially non-rotatable relative to said side surface portions engaged thereby;

second engaging means for engaging opposing substantially flat side surface portions of said arch wire or the like, and being substantially non-rotatable relative to said side surface portions engaged thereby;

said first and second engaging means extending substantially parallel to each other and both extending substantially perpendicularly to said longitudinal axis of said engaged arch wire and to the extending direction of said respective opposing substantially flat side surface portions of said arch wire or the like which are engaged thereby, and said first and second engaging means being movable relative to each other to twist said arch wire or the like about its longitudinal axis substantially without bending the longitudinal axis of the arch wire or the like;

indicating means on one of said engaging means and having an angle indicating scale thereon, said indicating means extending substantially parallel to said one engaging means and substantially perpendicularly to said longitudinal axis of said engaged arch wire or the like; and

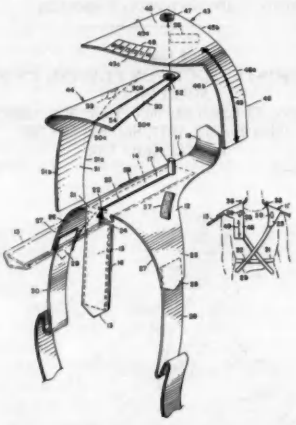
pointer means on the other of said engaging means, said pointer means extending substantially parallel to said other engaging means and substantially parallel to said angle indicating scale on said indicating means when both of said engaging means are in said engagement with said arch wire or the like, said pointer means cooperating with said angle indicating scale to indicate the degree of twisting of said arch wire or the like, about said longitudinal axis of said arch wire or the like when said engaging means are turned relative to each other about said longitudinal axis while in engagement with said arch wire or the like.

4,184,260

PATTERN FITTING SYSTEM AND METHOD

Helen L. Brockman, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Filed Aug. 10, 1978, Ser. No. 932,540
Int. Cl.² A41H *1/02, 1/10*
U.S. Cl. 33—15 **25 Claims**



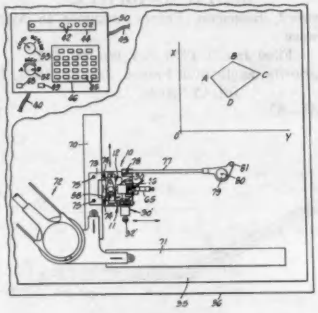
1. A system for use in the selecting and/or modifying of patterns for the fitting of clothing to a human figure, comprising a pair of shoulder seam defining members each having a body portion and a flap portion; said body portion having a stiff elongated central section adapted to extend along and rest upon the ridge of a subject's shoulder and having a pair of flexible front and rear wing sections adapted to fold downwardly over and conform generally with the respective front and rear surfaces of the subject's shoulder; means connected to said wing sections for securing both of said shoulder seam defining members in place upon a subject's shoulders; said flap portion of each member being stiff, elongated, and hingedly joined at one end to said body portion along a transverse hinge line adapted to be positioned at the outer limit of a subject's shoulder; each flap portion being adapted to hang downwardly against a subject's upper arm to direct the location of said hinge line at said outer limit of the subject's shoulder; and indicia means provided by each of said members adjacent the hinge line thereof.

4,184,261

MULTIPURPOSE DRAFTING AND MEASURING INSTRUMENT

Wolfgang P. Buerner, Pasadena, Calif., assignor to Los Angeles Scientific Instrument Co., Inc., Los Angeles, Calif.

Continuation of Ser. No. 757,765, Jan. 7, 1977, abandoned. This application Apr. 6, 1978, Ser. No. 893,985
Int. Cl.² B43L *13/00*
U.S. Cl. 33—18 R **42 Claims**



1. A multipurpose drafting instrument comprising in combination:

main frame means adapted to be grasped by the operator's hand and moved as a unit planarly in both linear and non-linear paths over sheet material while performing a precision drafting operation;

movement sensing signal generator means mounted on said main frame means having roller means adapted to rest in driving contact with said sheet material and including digital display means responsive to said signals to represent rotary movement of said roller means as said main frame means is moved through an operating excursion from one position to another in any linear or non-linear path; and

means on said main frame means resiliently supporting a marking device with the lower end thereof normally out of contact with said sheet material until manually depressed into contact therewith and with the axis thereof lying in substantially the same vertical plane as the axis of said roller means and unrestrained against movement out of said vertical plane, whereby said marking device, said signal generator means and said digital display means mutually cooperate in performing a high precision drafting operation as said marking device and said main frame means are moved planarly in linear and non-linear paths.

4,184,262

DEVICE FOR DETERMINING THE EXACT POSITION OF TWO MEMBERS LINEARLY DISPLACEABLE RELATIVE TO EACH OTHER

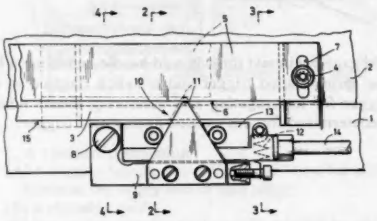
Alfred Kolb, Haus am Tannenberg, 6980 Wertheim, and Karl Lahme, Tannenstrasse 46, 6983 Kreuzwertheim, both of Fed. Rep. of Germany

Filed Mar. 24, 1978, Ser. No. 890,026

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714521

Int. Cl.[2] G01B 11/04

U.S. Cl. 33—125 R 1 Claim



1. Apparatus for determining the position of one of a pair of linearly displaceable members relative to the other, said members having contiguous horizontal surfaces, comprising

(a) a horizontal scale (3) secured to one of said members adjacent said horizontal surfaces, said scale having a horizontal scale surface (15) adjacent the other of said members;

(b) electrooptical scanning head means (13);

(c) holder means (9) pivotally connected with the other of said members for supporting said scanning head means adjacent said scale horizontal surface, said holder means being pivotable about a horizontal pivot axis (8) which is normal to a vertical plane which contains the axis of linear displacement of said members;

(d) spring means (12) pivotally biasing said holder means in the direction of said scale; and

(e) correction means for compensating for variations in the scale measurement, comprising

(1) a correction ruler (5) having a generally horizontal correction guide edge (6);

(2) means (4, 7) adjustably connecting said correction ruler with said scale at a generally horizontal position at which said correction guide edge is adjacent and spaced from said scale horizontal surface; and

(3) follower means (10) connected with said holder means for abutting engagement with said ruler correction guide edge, whereby upon displacement of one of said members relative to the other, said follower means pivots said holder means to vary the area of said horizontal scale surface viewed by said scanning head means in accordance with the configuration of said correction ruler, thereby to vary the number of graduations read off said scale in accordance with the direction of pivotal movement of said holder means.

4,184,263

APPARATUS FOR MEASURING THE WAVINESS OF A WORKPIECE SURFACE

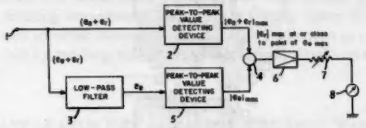
Youji Tatsumi, Funabashi, and Masuo Hachisu, Narashino, both of Japan, assignors to Seiko Seiki Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 715,055, Aug. 17, 1976, abandoned, which is a continuation of Ser. No. 533,530, Dec. 17, 1974, abandoned. This application Jul. 25, 1977, Ser. No. 818,961

Claims priority, application Japan, Dec. 17, 1973, 48/141508

Int. Cl.[2] G01B 7/12, 7/31; G06G 7/78

U.S. Cl. 33—178 E 3 Claims



1. An apparatus useable in conjunction with a workpiece detector for measuring the waviness of a workpiece circumferential surface comprising: a first peak-to-peak detector for detecting the maximum absolute value of the sum of a signal representative of the roundness error and a signal representative of the eccentricity error resulting from the eccentric center of the workpiece, these signals being generated by a workpiece detector which detects the workpiece surface during its rotation during use of the apparatus; a low-pass filter receptive of both signals and effective to pass only the eccentricity error signal; a second peak-to-peak detector for detecting the maximum absolute value of the output signal from said low-pass filter; and an arithmetic means for effecting subtraction of the absolute value of the output signal from said second peak-to-peak detector from that of the first peak-to-peak detector and providing an output signal representative of the maximum roundness error at or close to the point of the maximum eccentricity error.

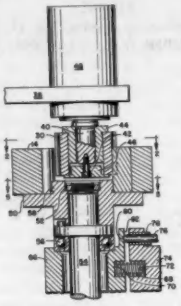
2. An apparatus useable in conjunction with a workpiece detector for measuring roundness of a workpiece circumferential surface comprising: first arithmetic means for summing a signal representative of the sum of the roundness error and an eccentricity error of a workpiece plus a preset signal having a set voltage corresponding to the positional error of a workpiece detector; a positive peak value-detecting device operative for detecting the maximum value of the output signal from said first arithmetic means; a first inverter receptive of the preset signal and operative to invert the same into one of the opposite polarity; second arithmetic means for summing the output signal from said first inverter and the signal representative of the sum of the roundness error and an eccentricity error; a negative peak value-detecting device operative for detecting the minimum value of the output signal from said second arithmetic means; third arithmetic means for subtracting the output from said negative peak value-detecting device from that of said positive peak value-detecting device; a second inverter receptive of the preset signal and operative to invert the same into one of the opposite polarity and two times the original set value; and fourth arithmetic means for summing the output from said third arithmetic means plus the output from said second inverter and providing an output signal representative of the value of the difference between the maximum and the minimum of the sum of the roundness error and an eccentricity error of the workpiece.

4,184,264

GEROTOR INTERNAL GEAR TESTING

Henry J. Flair, Franklin Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 11, 1978, Ser. No. 940,814
Int. Cl.[2] G01B 5/20
U.S. Cl. 33—179.5 C **2 Claims**



1. A gear checking mechanism comprising a master gerotor rotor test gear having a plurality of teeth with nodes and valleys, wherein said nodes are truncated at a radius such that each of said valleys are thereby provided with a curvature that has a length which is substantially equal to the length that the valley of a perfect gerotor rotor gear would be in contact with the tooth of a perfect gerotor stator gear, first means for securing the center of said master rotor gear at a fixed location and for allowing for the rotation of said master rotor gear, second means for locating the center of a gerotor stator gear so that it is spaced along an imaginary line from the center of said master rotor gear, and for rotating said gerotor stator gear, said second means being constructed so as to be displaceable along said imaginary line from the fixed center of said master rotor gear, and third means responsive to the displacement of said second means for providing a measure of the deviation of the center-to-center distances of said gerotor master rotor gear and said gerotor stator gear that is being checked; wherein said second means comprises a projecting arbor having a plurality of flat sections on it that are equal in number to the number of internal teeth that are on the gerotor stator gear so that said gerotor stator gear teeth frictionally engages said arbor thereby locking said gerotor stator gear to said arbor when said gerotor stator gear is rotated relative to said arbor.

4,184,265

THREAD GAGE

James Horton, Arcadia, Calif., assignor to Hydril Company, Los Angeles, Calif.

Filed Jan. 12, 1978, Ser. No. 868,986
Int. Cl.[2] G01B 3/38
U.S. Cl. 33—199 R **11 Claims**

1. A tool for gaging thread pitch and width at a plurality of locations in threads in the end of a pipe, said tool including:

a base element having at least one flat surface;

clamp means for clamping said base element to the pipe with said base element flat surface parallel with the longitudinal axis of said pipe and at a predetermined spacing from the threaded end of said pipe;

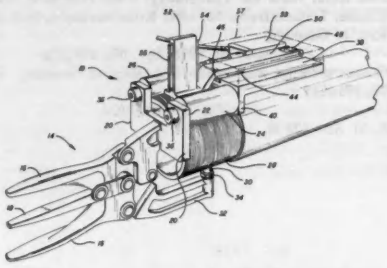
a movable member slidably coupled to said base element flat surface, said movable member being movable along said flat surface in only a direction parallel with the longitudinal axis of said pipe;

an arm coupled to said movable member having a portion overlying the threads in said pipe;

a gage pin mounted in the portion of said arm overlying said threads and positioned therein for insertion in said threads;

measuring means for measuring the relative movement between said base element and said movable member; and

a handle mounted on said arm for inserting and positioning



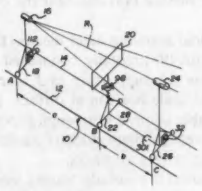
said gage pin in said threads, said handle including at least one spring-loaded trigger and a switch coupled to said trigger for interrogating said measuring means when a predetermined force is exerted against said trigger.

4,184,266

SINGLE BEAM REFERENCE SYSTEM FOR RAILWAY SURVEYING

Hans Hurni, Ecublens, Switzerland, assignor to Canron, Inc., New York, N.Y.

Filed Sep. 23, 1977, Ser. No. 836,223
Int. Cl.[2] E01B 35/08
U.S. Cl. 33—287 **24 Claims**



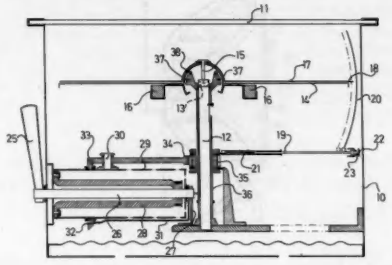
1. A railway track surveying apparatus comprising a single transmitter for transmitting a light frequency beam mounted for movement along a track at a fixed lateral position relative to the rails for transmitting a beam along the track; a single receiver means mounted for movement along the track at a position spaced from the transmitter and at a fixed lateral position relative to the rails for receiving at least a portion of the beam; and a single beam interference means mounted for movement along the track at a position between the transmitter and the receiver, means for determining the cross levels of the track at the transmitter and the receiver; and control means for controlling operation of the apparatus, including means for selecting one or the other of the track rails or the track centerline as a datum line for the determination of the levelling of the rails and means for adjusting the height of one of the transmitter, the receiver and the beam interference means in dependance on the cross levels of the track at the transmitter and the receiver to compensate for the selection.

4,184,267

COMPASS HAVING A COURSE DIRECTING POINTER

Rustan Lénberg, Kungsportsavenyen 43, Gothenburg, Sweden (41136)

Filed Jun. 5, 1978, Ser. No. 912,721
Claims priority, application Sweden, Jun. 7, 1977, 7706586
Int. Cl.[2] G01C *9/00*
U.S. Cl. 33—349 6 Claims



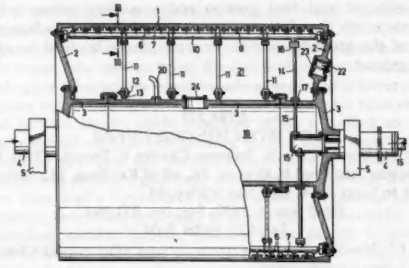
1. A compass comprising:
(A) a housing having a central upstanding pillar and bearing means at the upper end of said pillar;
(B) a rotatable card;
(C) means for carrying said card in relation to said bearing means;
(D) a pointer, and means for supporting same for rotation about said bearing means and with a frictional engagement to said card, at least one end of said pointer extending past the periphery of said card;
(E) an arm having a sleeve at one end thereof, said sleeve concentrically enclosing said pillar below said card;
(F) means for rotating said sleeve in relation to said pillar, said rotating means having a handle disposed outside said housing;
(G) a finger extending from the end of said arm remote from said pillar and reaching up above said card; and
(H) means at said sleeve for lifting said card from said bearing means during a rotational movement of said lifting means.

4,184,268

DRYER DRUM FOR A PAPER MAKING MACHINE

Alan Christin, Ravensburg, and Anton Zembrot, Aulendorf, both of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Aug. 15, 1977, Ser. No. 824,728
Claims priority, application Switzerland, Aug. 27, 1976, 10881/76
Int. Cl.[2] D21F *5/10*
U.S. Cl. 34—124 12 Claims



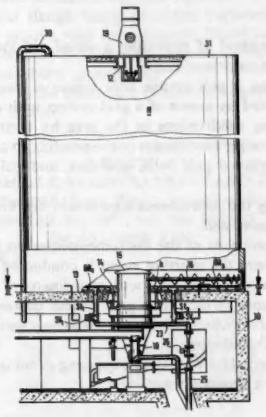
1. A dryer drum for a paper-making machine comprising a cylindrical shell disposed for rotation about a longitudinal axis thereof, said shell having an interior wall and a plurality of annular ribs disposed on said wall to define grooves therebetween;
at least one header pipe mounted about a longitudinal axis thereof within said shell parallel to said axis of said shell;
means journalling each end of said header pipe for rotation about said longitudinal axis;
releaseable securing means for fixing said header pipe in a predetermined position about said axis and relative to said shell;
a plurality of scavenging pipes connected to said header pipe for projecting into said respective grooves to remove condensate therefrom in said predetermined position of said header pipe; and
a drain line detachably connected to said header pipe for draining condensate therefrom whereby upon release of said securing means said header pipe is allowed to rotate in said journalling means about said longitudinal axis thereof.

4,184,269

APPARATUS FOR AERATING ORGANIC WASTE MATERIAL

Franz X. Kneer, Eschenburg-Eibelshausen, Fed. Rep. of Germany, assignor to Gebrüder Weiss KG, Dillenburg, Fed. Rep. of Germany

Filed Dec. 14, 1978, Ser. No. 969,686
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2757144
Int. Cl.[2] F26B *17/12*
U.S. Cl. 34—168 8 Claims



1. Apparatus for aerating organic waste materials to transform the waste materials into compost, comprising a stationary container having an upper end, a lower end and a cylindrically shaped side wall extending between said upper and lower ends, said upper end having an inlet opening for the waste materials, said lower end having an outlet opening for the compost so that the waste materials flow downwardly through said cylindrically shaped container, means located in the lower end of said container for moving the compost in the lower end to said outlet opening, means for supplying air into the material column at the lower end of said container for flow upwardly through the material column, means for controlling the flow of air into the material column, wherein the improvement comprises that said means for supplying air comprises a plurality of air inlet ducts located in the lower end of said container and said ducts being spaced apart and each having a plurality of spaced openings so that each said duct supplies air into a sector shaped part of the transverse cross-section of said material

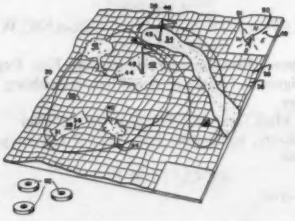
column, a common air supply pipe for said air inlet ducts, said means for controlling the flow of air comprises a time switch connected to each said air inlet duct and arranged to connect each said air inlet duct, in turn, to said air supply pipe for flowing air for a given period of time into the sector associated with said air inlet duct in accordance with the moisture content of the aerated compost removed from the same said sector by said means for moving the compost material.

4,184,270

VISUAL AID TO BROADCASTED GOLF GAMES

Richard B. Presbrey, 236 Kuumele Pl., Kailua, Hi. 96734

Filed Dec. 28, 1973, Ser. No. 429,686
Int. Cl.[2] G09B *29/00*
U.S. Cl. 35—7 R **8 Claims**



1. The method of providing a visual aid for broadcasted sporting events comprising

subdividing a golf course area where a sporting event is conducted by means of a grid system with coordinates,

designating subdivisions in the area by their coordinates,

broadcasting coordinates corresponding to subdivisions in which played golf balls, golf tees, and golf pins are located,

identifying the instrumentalities which are located in each subdivision, and

locating positions of the instrumentalities on a map of the area where the sporting event is conducted by matching broadcasted coordinates with coordinates of a grid system on the map, which map grid system corresponds to the grid system which subdivides the area where the sporting event is conducted;

whereby, conduct of play in a sporting event is charted on a map by a broadcast audience.

4,184,271

MOLECULAR MODEL

James W. Barnett, Jr., 4428 Avenue R, Galveston, Tex. 77550

Filed May 11, 1978, Ser. No. 905,003
Int. Cl.[2] G09B *23/26*
U.S. Cl. 35—18 A **6 Claims**

1. A model of a nucleic acid molecule comprising

(a) two rigid self-supporting helical strands composed of

(i) a plurality of helical segments fitted together in end to end relation as two right hand helixes, in which each segment is preformed in a rigid helical curvature and length proportioned to the sugar-phosphate backbone of an individual nucleotide, and

(ii) means securing said segments together, and

(b) a plurality of members proportioned to the shape and dimensions of the purine-pyrimidine units of said nucleic acid molecule and secured rigidly one on each of said helical segments, and having securing means connected to

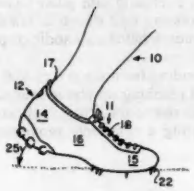
like members on adjacent units to support said helical strands in accurate asymmetrical relation.

4,184,272

ATHLETIC SHOE FOR TRACK COMPETITION AND INTERVAL TRAINING

Donnie E. Riggs, 1606 Monteval Ct., San Jose, Calif. 95120

Filed Jun. 26, 1978, Ser. No. 918,914
Int. Cl.[2] A43B *5/00*; A43C *15/00*
U.S. Cl. 36—129 **8 Claims**



1. An athletic shoe comprising, in combination:

an upper shell comprising a heel portion, midportion and toe portion for fitting around the foot of the wearer;

a sole fastened to said upper portion and having a bottom surface positioned to contact the ground;

a plurality of rigid spikes fixed to the sole bottom surface adjacent said toe portion and extending substantially vertically therefrom; and

a plurality of resilient cleats fixed to the sole bottom surface adjacent said heel portion and extending substantially vertically therefrom to support the sole bottom surface off of the ground when the wearer places his heel on the ground.

4,184,273

BOOT WITH HINGED UPPER

Scott M. Boyer; Chris R. Dawson; Charles S. French; Clyde R. Morgan, and Fred F. Grabos, Jr., all of Ketchum, Id., assignors to Scott USA, Inc., Sun Valley, Id.

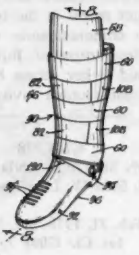
Filed Sep. 6, 1977, Ser. No. 831,084
Int. Cl.[2] A43B *5/04*
U.S. Cl. 36—131 **32 Claims**

1. A boot comprising:

a lower shell for containing a wearer's foot,

an upper shell assembly including an arcuate front plate formed of a high impact material and having an upwardly

extending protective skirt, a separate arcuate rear cuff formed of a material less tough than the front plate, the front plate and the rear cuff forming a generally cylindrical shell with the protective skirt protruding vertically above the top portion of the rear cuff a sufficient extent to protect the wearer's shin adjacent the wearer's knee, closure means for opening and closing the cylindrical shell



to allow entry of a wearer's foot and leg, a waterproof inner liner of generally cylindrical configuration and having a bottom region hermetically sealed to the lower shell, and a replaceable bootie insertable through the inner liner and into the lower shell for fitting a wearer's foot, and

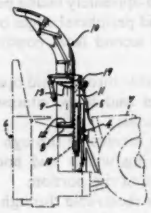
connector means interconnecting the upper shell assembly to the lower shell for pivoting movement therebetween.

4,184,274

EJECTION TUBE ASSEMBLY FOR A SNOWBLOWER

Paul-Eugéne Vohl, 1738 rue Principale, St-Marc-des-Carriéres, Québec, Canada

Filed Jul. 5, 1978, Ser. No. 922,074
Claims priority, application Canada, Aug. 31, 1977, 285908
Int. Cl.² E01H 5/00
U.S. Cl. 37—43 R **3 Claims**



1. An ejection tube assembly for a snowblower, said assembly comprising, in combination, support means operatively fixable to the snowblower, an ejection tube upwardly extending endwise and including a lower and an upper tube sections, said lower tube section being fixed to said support means and said upper tube section telescopically engaging said lower tube section and being upwardly displaceable endwise relative to said support means, guide means including a guiding section and a guided section, said guiding section being fixedly connected to said upper tube section and operatively forming with the guiding section a guideway extending parallel to said ejection tube, and a hydraulic cylinder fixedly connected at the opposite ends relative to said tube sections, respectively, and extending parallel thereto, thereby telescopically extending and retracting said tube sections relative to each other for selective retraction and extension of the ejection tube and wherein said guided section includes a pair of guide rods fixedly secured relative to said upper tube section and bodily displaceable therewith and said guiding section includes a pair of sleeve members slidably holding said guide rods, respectively, and cooperatively defining therewith an upright guideway.

4,184,275

REUSABLE BADGE

Ernest L. Thornell, 412 Clark St., Horicon, Wis. 53032

Filed Nov. 1, 1977, Ser. No. 847,573
Int. Cl.² A44C 3/00
U.S. Cl. 40—1.5 **3 Claims**

1. A reusable badge comprising:

a Concavo-convex lens member of transparent resilient plastic sheet material having a peripheral flange extending from its concave face, said flange defining an inwardly facing peripheral groove;

a resilient plate adjacent the concave face of said lens member with its peripheral edge portion being flexed radially inwardly and snap seated in said peripheral groove to be resiliently and releasably retained therein;

said peripheral flange being provided outwardly of said peripheral groove with an outwardly flared surface portion whereby said backing plate may be forcibly cammed into said peripheral groove; and

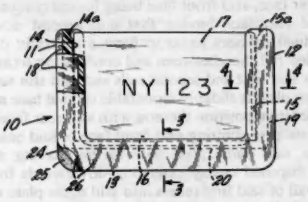
a clip member at the outer face of said backing plate within the outline thereof.

4,184,276

MOTOR VEHICLE REGISTRATION CARD HOLDER

Albert Hernandez, 465 Ocean Pkwy., Brooklyn, N.Y. 11218

Filed Oct. 14, 1977, Ser. No. 842,062
Int. Cl.² G09F 3/00
U.S. Cl. 40—10 A **2 Claims**



1. A holder for an automobile identification card or the like comprising a substantially U-shaped frame having a bottom leg and a pair of free standing, spaced apart, upright legs mounted at the ends thereof with an opening therebetween, said frame being made of a light, flexible material and the outside side walls of the upright legs and the bottom side of the bottom leg being grooved lengthwise of said legs to provide rigidity with lightness, means forming in the inside walls of said upright legs substantially co-planar grooves defining a slot within which an automobile identification card is adapted to be removably received, the depths of said grooves being so dimensioned that the slot defined thereby is substantially wider at the upper end thereof than the card to facilitate its entry thereinto, and then narrows gradually to a width only slightly greater than the card, and a layer of flexible material affixed to an outside wall of said frame and coated with a pressure-sensitive adhesive to

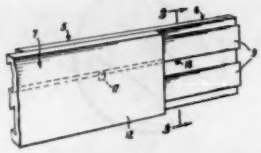
enable it to be secured to a supporting surface with said card-receiving slot substantially parallel thereto.

4,184,277

LOCKABLE NAME PLATE

Jean Larin, Montreal, Canada, assignor to Emboss-O-Prestige LTEE, Longueuil, Canada

Continuation of Ser. No. 723,468, Sep. 15, 1976, abandoned. This application Jun. 2, 1978, Ser. No. 911,877
Claims priority, application Canada, Jul. 23, 1976, 257652
Int. Cl.[2] G09F 7/04, 7/10
U.S. Cl. 40—10 R **1 Claim**



1. A lockable name plate and base member assembly having theft discouraging features, said assembly comprising:

an elongate base member adapted to be fixed in place extending in a generally horizontal direction relative to a substantially vertical support surface and comprised of a generally plate-shaped base that has when said base member is so fixed a substantially vertical front face and a substantially vertical rear face which is in abutting relationship with the support surface, means for vertically mounting said base to the support surface so as to extend in a generally horizontal direction, first and second, raised spaced apart, parallel dovetailed rails integral with said base front face extending along the length thereof and forming a dovetailed slot therebetween, said base having a transversely disposed cavity centrally disposed between said front and rear faces thereof at a distance from one end thereof that is generally vertical when said base member is so fixed, said cavity extending upwards behind said rail and downwards below said rail so as to be closed behind said rail and exposed below said rail;

a lockable name plate comprised of a base having a front face and a rear face, said front face being for carrying a legend and said rear face having first and second dovetailed longitudinal recesses so as to form a centrally disposed dovetailed rail therebetween and conforming to and mating with said first and second rails and said slot such that said name plate is slidably mountable on said base member to an operative position thereon with said rear face of said name plate base abutting said front face of said base member base, said name plate base further having a transversely disposed cavity extending downwards from the lower wall of said first recess into said name plate rail and in vertical alignment with said base member cavity when said name plate is mounted in said operative position and on said base member which in turn has been so fixed; and

hidden locking means for locking said name plate to said base member, said locking means being invisible and inaccessible when said name plate is mounted on said base plate in said operative position, said locking means comprising a locking member that can be moved under the influence of a magnetic force and that comprises a magnetic metal rod-shaped dowel confined for slidable movement within said base member cavity, said name plate cavity being a catch means for engaging the lower part of said locking member upon the alignment thereof with said locking member at said operative position of said name plate and said base member, said locking member being movable across the mating edges of said first base member rail and said name plate rail and mounted such that it can drop into said name plate cavity when mounted on said base member at said operative position and thereupon locking said name plate and said base member together;

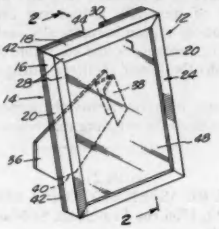
said locking means being unlockable by a magnetic means for cooperating with a predetermined position on said assembly to effect withdrawal of said locking member from said catch means with only magnetic force so as to permit sliding movement and disengagement of said name plate from said base member said base member is extruded and has a larger recess in the rear face thereof located behind and in communication with said base member cavity, said base member further including a plug mounted in said larger recess being for retaining said dowel in said base member cavity.

4,184,278

COMBINATION MIRROR AND DISPLAY DEVICE

Richard S. Fournet, 5932 W. Lindenhurst, Los Angeles, Calif. 90017

Filed Feb. 21, 1978, Ser. No. 879,049
Int. Cl.[2] G09F 1/12
U.S. Cl. 40—152.1 **6 Claims**



1. A combination mirror and display device comprising:

(a) a body portion having an opening therein and defining oppositely disposed peripheral edges;

(b) first and second oppositely facing peripheral rim portions connected to said peripheral edges of said body and presenting first and second faces constructed of a magnetic material;

(c) a mirror receivable through said opening in said body for mounting within said body intermediate said first and second rim portions;

(d) a display sheet receivable through said opening in said body for mounting within said body intermediate said mirror and said first rim portion;

(e) retaining means receivable through said opening in said body intermediate said mirror and said display sheet for releasably positioning said last mentioned elements within said body; and

(f) support means for supporting said body portion, including a rigid backing member having magnetic means affixed thereto said magnetic means comprising strips of magnetic material affixed to said backing member and being adapted to releasably engage said first and second faces of said rim portions.

4,184,279

BRUSH OR OTHER IMPLEMENT AND DISPLAY CARD THEREFOR

Lester R. Pellet, 6144 N. Talman Ave., Chicago, Ill. 60659

Filed Dec. 2, 1977, Ser. No. 856,726
Int. Cl.[2] G09F 3/00
U.S. Cl. 40—314 **7 Claims**

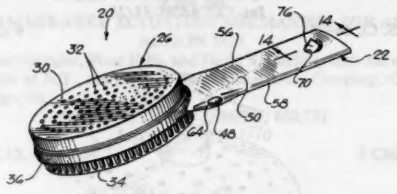
1. An implement-display card combination, comprising an implement with a body and a generally flat handle projecting laterally from said body,

a display card made of flexible sheet material and wrapped around said handle,

said handle having two opposite sides,

said display card having a first panel adjacent one side of said handle,

said display card having second and third panels connected to said first panel by folds and wrapped around said handle into superimposed relation adjacent the opposite side of said handle,



and means securing said second and third panels together in superimposed relation,

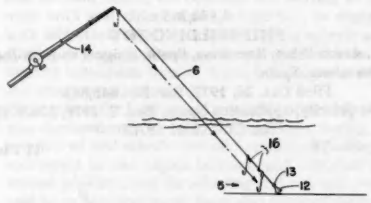
said handle and said display card having interlocking elements for retaining said display card on said handle, said interlocking elements comprise edgewise projections on opposite edges of said handle, and openings in said display card for receiving said edgewise projections.

4,184,280

METHOD OF FISHING USING A SLIP-RING FISHING DEVICE

Leroy Friend, 1611 S. Oakwood, Peoria, Ill. 61605

Filed Mar. 10, 1978, Ser. No. 885,293
Int. Cl.² A01K *69/00*
U.S. Cl. 43—4.5 **1 Claim**



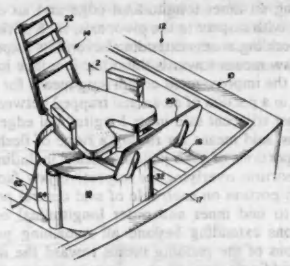
1. A method of fishing comprising: employing a slip-ring of substantially annular structure having inside-diameter inner-bearing surfaces forming uniformly large through-space at all points being of a size sufficiently large such that the slip-ring is slidable over any one of a plurality of line-mounted barriers in response to an undulation of said fishing line, including placing the slip-ring around a fishing line having a weight at a distal end thereof and having a plurality of said line-mounted barriers as serially arranged barriers arranged and located between the proximal and distal ends of the fishing line substantially at and spaced-away from said distal end; supporting the fishing line at a proximal end thereof; attaching a hook element to the slip-ring; placing the weight and distal end deeply into a body of water substantially below a level of said proximal end; placing the slip-ring over the line and allowing the slip-ring to slide down the line to said plurality of line-mounted barriers; causing the fishing line to undulate sufficiently for the slip-ring to slip-over an adjacent one of said line-mounted barriers downwardly along the fishing line toward said weight.

4,184,281

LIVE BAIT WELL

Karl W. Corby; William H. Ogden, III, both of Ocean Reef Club, Key Largo, Fla. 33037, and Harold London, 11141 SW. 40th Ct., Davie, Fla. 33328

Filed Aug. 8, 1978, Ser. No. 932,019
Int. Cl.² A01K *97/00*
U.S. Cl. 43—57 **15 Claims**



1. An inboard bait well adapted to be positioned in place around a substantially vertical deck mounted pedestal which is utilized, for example, to support a fishing chair on a fishing vessel, the combination comprising:

a tub body having side and bottom walls and including a concentric sleeve through the bottom wall to provide a water compartment therein, said sleeve having an inside dimension at least as great as the outside dimension of said pedestal so as to allow the tub body to be set in place around said pedestal;

input means for feeding water into said water compartment;

output means for discharging water therefrom; and

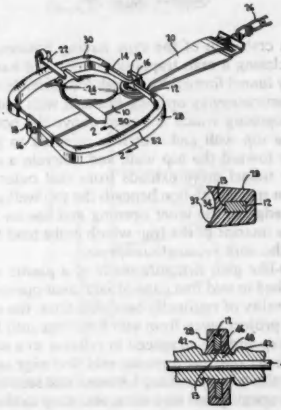
means establishing a predetermined constant depth of water in said water compartment, which means additionally includes means for coupling overflow water to said output means.

4,184,282

PADDED JAW ANIMAL TRAP

Norman Lifshutz, Meriden, Conn., assignor to Woodstream Corporation, Lititz, Pa.

Filed Dec. 8, 1977, Ser. No. 858,905
Int. Cl.² A01M *23/26*
U.S. Cl. 43—90 **10 Claims**



1. In an animal trap including a pair of elongated jaw means

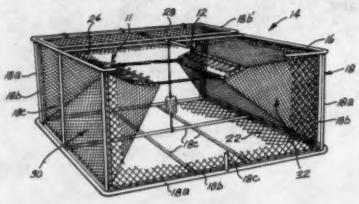
for releasably holding an animal, the jaw means including jaw faces, an actuator means for urging the jaw means about a pivot axis from a set position to a sprung position wherein the jaw faces are juxtaposed, latch means for releasably retaining the jaw means in the set position, and trigger means for releasing the latch means, the jaw faces including padding means carried by each jaw means, the padding means including padded face portions comprised of a resilient material and juxtaposed in the sprung position of the trap, the face portions each having an inner longitudinal edge and an outer longitudinal edge with respect to the pivot axis, each of the face portions of the padding means extending beyond its respective jaw face of the jaw means towards the other jaw face in the sprung position, the improvement comprising means for raising a ridge of flesh in a portion of an animal trapped between said jaw means at least adjacent said inner longitudinal edge of each padding means, said means for raising a ridge of flesh comprising said face portions of each padding means including a resilient central portion overlying its respective jaw face and a resilient raised portion on each side of said central portion at or adjacent to said inner and outer longitudinal edges, said raised portions extending beyond all remaining parts of said face portions of the padding means toward the raised portions of the padding means of the opposite jaw means in the sprung position of said jaw means, said face portions of each padding means having an inclined surface extending between each raised portion and said central portion, said inclined surfaces causing said raised portions to deform outwardly from said central portion on contact with a portion of an animal trapped between said jaw means thereby tending to flatten said face portions to a non-convex surface.

4,184,283

ANTI-ESCAPE GATE FOR THE ENTRY TUNNEL OF A CRAB TRAP

Robert E. Wyman, P.O. Box 1847, Sitka, Ak. 99835

Filed Jan. 18, 1978, Ser. No. 870,379
Int. Cl.[2] A01K *69/08*
U.S. Cl. 43—102 **6 Claims**



1. In a crab trap of the type having bottom, top and side walls enclosing a crab trapping interior and having at least a first entry tunnel formed by a mesh that extends inwardly from an outer entranceway opening in a side wall and terminates at an inner opening which is spaced above the bottom wall and below the top wall and which is oriented to generally face upwardly toward the top wall, and wherein a top portion of the entry tunnel mesh extends from said outer entranceway opening in spaced relation beneath the top wall and terminates at a first edge of the inner opening and has an upper surface within the interior of the trap which crabs tend to crawl onto, wherein the improvement comprises:

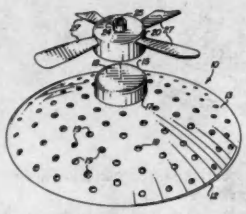
a comb-like gate structure made of a plastic substance and attached to said first edge of said inner opening and having a plurality of resiliently bendable tines, the ends of which tines project away from said first edge into the interior of the trap and are so spaced in relation to a second edge of said inner opening opposite said first edge such that crabs enter the trap by passing between said second edge of said inner opening and said tines, and drop to the bottom wall of the trap, and such that trapped crabs which have crawled up onto the upper surface of the entry tunnel mesh are prevented from escaping back out through said inner opening by said tines which resiliently bend under the weight of the crabs and force the free ends of the tines downwardly against said second edge of the inner opening shutting off the opening to escape.

4,184,284

BUBBLE PRODUCING FLYING TOY

Dino J. Rogahn, #5 5330 N. 18th St., Phoenix, Ariz. 85016

Filed May 30, 1978, Ser. No. 910,610
Int. Cl.[2] A63H *33/28*
U.S. Cl. 46—8 **9 Claims**



1. A flying toy which is caused to rotate during flight by a rotating force applied to the toy from a source separate from the toy prior to flight and which produces bubbles from a bubble forming solution during flight, said toy comprising:

(a) a substantially rigid plate like body having a top surface;

(b) an aperture extending through said body and having an open end at the top surface of said body;

(c) a reservoir carried by said body for holding a quantity of said bubble forming solution; and

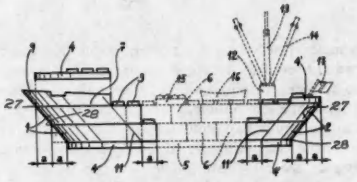
(d) means for releasing said bubble forming solution from said reservoir during flight, whereby said solution is distributed over the upper end of said aperture in response to rotation of said toy.

4,184,285

SHIPBUILDING TOY

Jose M. Arnau Pibet, Barcelona, Spain, assignor to Exin-Iber S. A., Barcelona, Spain

Filed Oct. 26, 1977, Ser. No. 845,842
Claims priority, application Spain, Dec. 7, 1976, 224.971[U]
Int. Cl.[2] A63H *33/08*
U.S. Cl. 46—24 **14 Claims**



1. A toy block for use with other toy blocks for the construction of a toy ship, said block comprising

a generally planar bottom face,

a generally planar top face,

symmetrically spaced projections extending upwardly from the plane of said top face,

projection-receiving means associated with said bottom face for receiving symmetrically spaced projections like those on said top face for interlocking engagement therewith,

a plurality of side faces consisting of first, second, and third side faces,

said first and second side faces each having curved portions converging toward the other and adjoining the other at tip portions including tip portions disposed in the planes of said top and bottom faces, and

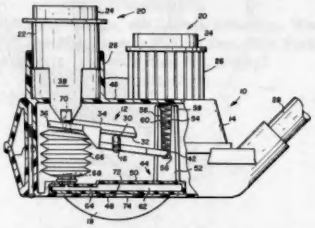
said third side face disposed in a plane generally perpendicular to said top and bottom faces, said tip portion in said plane of said top face being spaced farther from said third face than is said tip portion in the plane of said bottom face.

4,184,286

DAMAGE-FREE ACTUATING MECHANISM FOR AN ACTION TOY

Duane Spengler, West Falls, and David S. Darling, East Aurora, both of N.Y., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Dec. 21, 1977, Ser. No. 862,731
Int. Cl.[2] A63H *11/10*
U.S. Cl. 46—205 **4 Claims**



1. A damage-free actuating mechanism for an action toy of the type in which an object is moved between retracted and extended positions in response to the rotation of a pair of wheels, comprising in combination:

a shaft to which said pair of wheels is secured, said shaft having a crank;

fulcrum means;

a pivotal lever having one end portion in engagement with said fulcrum means, the opposite end portion in engagement with said object, and a midportion in engagement with said crank whereby rotation of said wheels and said crankshaft imparts pivotal movement to said lever which imparts movement to said object between said retracted and extended positions; and

resilient means for biasing said one end portion of said lever into engagement with said fulcrum means during normal rotation of said wheels and said crankshaft for imparting movement to said object between said retracted and extended positions, and for allowing said one end portion of said lever to move away from said fulcrum means when said object is manually pushed from its extended position to its retracted position while said wheels and said crankshaft are substantially stationary whereby pivotal movement of said lever about said crank in its uppermost position is permitted without damage to said lever.

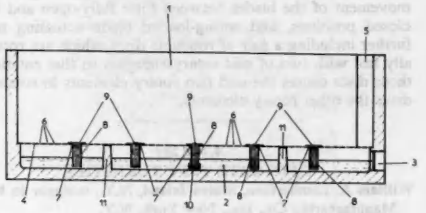
4,184,287

PLANT-GROWING DEVICE WITH A WATER RESERVOIR

Jacques Roth, 13, quai Mullenheim, Strasbourg (Bas-Rhin), France

Continuation of Ser. No. 729,776, Oct. 5, 1976, abandoned. This application Oct. 3, 1978, Ser. No. 948,764
Claims priority, application France, Oct. 28, 1975, 75 33724
Int. Cl.[2] A01G *27/00*
U.S. Cl. 17—81 **1 Claim**

1. A plant-growing device with a water reservoir and means for supplying water in regulatable manner from the reservoir to a mass of rooting medium, the device comprising a container of which the lower part forms the reservoir and is provided with a sight-glass to permit supervision of the water level, a plate extending over and covering the reservoir for supporting a rooting medium in which the plants are to grow, and a water-supply channel for the introduction of water to the reservoir, characterized in that the plate is provided all over its surface with multitudinous small holes for the aeration and drainage of the rooting medium, and distributed over the area of the plate there are larger holes through which extend tubes open at their upper ends to the rooting medium and dipping with their lower ends into the water in the reservoir, the tubes containing a water-compatible material which by capillarity transfers water from the reservoir to the rooting medium, at least some of the



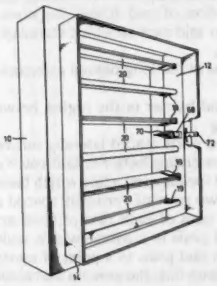
tubes being open at their lower ends, and means for regulating the supply of water to the rooting medium comprising a plurality of stoppers whereby the lower end of at least one of said tubes may be selectively closed by one of said stoppers for the purpose of preventing the transmission of water to the rooting medium through said at least one of said tubes, the bottom part of the container having upstanding pillar-like portions spaced inwardly from the side walls of the container molded directly therewith for supporting the plate, the container having a ledge upon which the margins of the plate rest, the water-compatible material being capillary foamed hydrophilic synthetic plastic material which substantially fills each of said tubes and extends no lower than the lower ends of the tubes.

4,184,288

SMOKE AND FIRE SHIELD DAMPER

Robert J. Magill, Whitstable, and Sydney J. Field, Ashford, both of England, assignors to Actionair Equipment Limited, Whitstable, England

Filed Jun. 16, 1978, Ser. No. 916,357
Claims priority, application United Kingdom, Jun. 23, 1977, 26387/77
Int. Cl.[2] E05F *15/20*
U.S. Cl. 49—7 **7 Claims**



1. A combination smoke and fire shield damper comprising a frame providing an opening through which air may pass, a line of substantially parallel blades arranged in said opening of the frame, blade supporting means on the frame to support

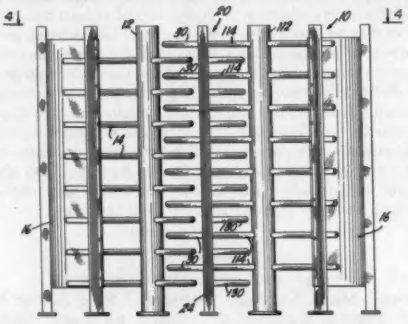
each blade in a rotatable manner so that the blades are swingable about parallel axes to open and close said opening in the frame, said blades being of aerofoil section and thereby having leading edges and trailing edges, said trailing edges being of forked section whereby the trailing edge of a blade embraces and interlocks with the leading edge of an adjacent blade when the blades are in their fully-closed positions to close said opening in the frame, spring-loaded actuating means to move the blades automatically into a selected one of their fully-closed and fully-open positions, a fusible link to initiate operation of said spring-loaded actuating means, the fusible link being designed to melt when a fire breaks out, said spring-loaded blade-actuating means including rotary elements, one for each blade, which are rotatable in unison to cause corresponding swinging movement of the blades between their fully-open and fully-closed positions, said spring-loaded blade actuating means further including a pair of rotatable discs which are rotationally fast with two of said rotary elements so that rotation of those discs causes the said two rotary elements to rotate and drive the other rotary elements.

4,184,289

TWIN-GATE TYPE TURNSTILE

William A. Lambertson, Staten Island, N.Y., assignor to Perey Manufacturing Co., Inc., New York, N.Y.

Filed Sep. 6, 1978, Ser. No. 940,345
Int. Cl.[2] E06B *11/08*
U.S. Cl. 49—42 **1 Claim**



1. In a turnstile structure of the twin-gate type having a pair of turnstile rotors rotatable about vertical axes, each rotor carrying vertical rows of radial arms thereon, the rows being circularly spaced about the rotor axis, the spacing between said axes and the vertical spacing of the arms of one rotor with respect to those of the other rotor being such that during the course of rotation of said rotors the arms thereof transit a region between said axes in which the arms of the respective rotors overlap,

barrier means at the longitudinal extremes of said structure, and

a fixed central barrier in the region between said axes and comprising

a pair of fixed posts spaced laterally outwardly of an imaginary line extending between said rotor axes and disposed at opposed locations on a line which bisects said imaginary line, and two rows of vertically spaced arms fixed to said posts, the arms of each row of fixed arms extending between said posts in a course which widens in a direction away from said posts to a point of maximum widening at said imaginary line, the arms on said rotors during rotation of same passing between said fixed arms, the improvement

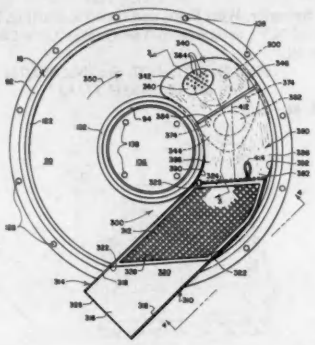
wherein at least the portions of the lengths of said fixed arms adjacent said posts follow an arcuate course, the arms of one of said fixed rows of arms being vertically staggered relative to the fixed arms of the other row of fixed arms, with the fixed arms of one of said rows of fixed arms facing the other row and being in planar alignment with the arms of the rotor remote from said one row.

4,184,290

UNLOADING SYSTEM FOR BOWL-TYPE VIBRATORY FINISHING MACHINE

John F. Rampe, Mayfield Heights, Ohio, assignor to Rampe Research, Cleveland, Ohio

Continuation-in-part of Ser. No. 714,823, Aug. 16, 1976, Pat. No. 4,091,575. This application Apr. 5, 1978, Ser. No. 893,630
Int. Cl.[2] B24B *31/06*
U.S. Cl. 51—163.2 **21 Claims**



1. In a vibratory finishing machine of the type including a base, a bowl adapted to receive finishing media and workpieces to be finished therein, means movably supporting the bowl on the base, and a drive system for vibrating the bowl relative to the base to effect a churning and precessing of media and workpieces in the bowl to impart a finishing action to the workpieces, the improvement of a system for unloading finished workpieces from the bowl, comprising:

(a) structure defining a channel overlying a portion of the bowl and including media separation means defining a plurality of apertures of predetermined size through which media entering the channel will fall back into the bowl and across which finished workpieces entering the channel will pass for discharge;

(b) ramp means including a ramp member which is insertable into and removable from the bowl for selectively directing media and finished workpieces from the bowl into the channel; and

(c) the ramp member including first and second relatively rigid portions extending side-by-side and being connected by flexible means for rendering the ramp member foldable to facilitate its insertion into and removal from the bowl.

4,184,291

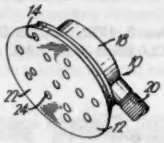
VACUUM HAND SANDING DEVICE

Miksa Marton, R.R. #1, Old Castle, Ontario, Canada

Filed Sep. 27, 1977, Ser. No. 837,035
Claims priority, application Canada, May 31, 1977, 279561
Int. Cl.[2] B24B *23/00*
U.S. Cl. 51—170 R **1 Claim**

1. A vacuum hand sanding device comprising a back-up pad with apertures in the operative surface thereof and adapted to receive an apertured, abrasive sanding disc on said operative surface with the apertures in the disc being in registry with the apertures in the pad; and means for connecting said back-up pad with a vacuum source comprising a housing mounted on the top of the back-up pad with a tubular member on the side of the housing for connection to a vacuum source and with a relief valve positioned on the upper surface of the housing and operable by the hand of an operator during use of the sander

and comprising an aperture in said upper surface of the housing for progressive and selective closing by the hand of an operator and including a pivotally mounted door over said aperture



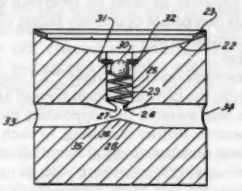
for selecting the amount of relief from said vacuum; said housing being smaller in area than said back-up pad and of a size so as to be operable by one hand.

4,184,292

VACUUM CHUCK

August DeFazio, Englishtown, and Melvin E. Kamen, Woodcliff Lake, both of N.J., assignors to Revlon, Inc., New York, N.Y.

Filed Mar. 24, 1978, Ser. No. 890,012
Int. Cl.[2] B24B *41/06*
U.S. Cl. 51—235 **6 Claims**



1. A vacuum chuck for use in lens grinding comprising a cylindrical block with a concave upper surface having on its outer edge an annular gasket whose outer diameter is equal to the diameter of the block; said block being provided with a vertical circular bore extending downward from the top of the block to join a through horizontal passageway in the block, the vertical bore being constricted before joining the through horizontal passageway; said vertical bore having resting therein a helical spring and a metallic sphere on top of the spring, the diameter of the sphere being less than the diameter of the bore, and an annular groove below the top opening of the bore, said groove holding an O-ring whose inner diameter is less than the diameter of the sphere; the through horizontal passageway having two opposed openings, one side of said passageway being constricted towards the center of the block to form a venturi which meets the bottom opening of the vertical bore, and the other side of the passageway being widened beyond the venturi; and a separate L-shaped passageway comprising a horizontal portion going inward from the side of the block to join a vertical portion going downward from the top of the block, the horizontal portion being threaded and holding a screw cap.

4,184,293

ROLL NECKREST SUPPORT

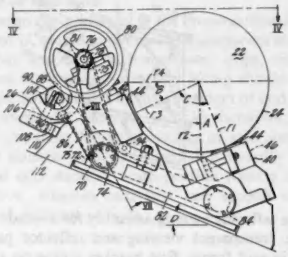
Robert G. Bennett, Jr., Seymour, Conn., assignor to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 834,049, Sep. 16, 1977, abandoned. This application Sep. 14, 1978, Ser. No. 942,371
Int. Cl.[2] B24B *41/06*
U.S. Cl. 151—238 R **5 Claims**

1. A roll grinding machine comprising a bed wherein a cylindrical roll may be longitudinally supported thereover; at least one neckrest for supporting said roll on said machine, said neckrest including:

a bottom gib disposed on a base member having a longitudinal axis arranged at a first acute angle with respect to a horizontal plane bisecting said roll, said bottom gib being arranged in a direct supportive relationship with respect to said roll;

a side gib disposed on said base member having a longitudinal axis arranged at a second acute angle with respect to



said horizontal plane, said side gib being arranged in a direct supportive relationship with respect to said roll; and

said base member being movably disposed on an arrangement of ways permitting translational movement of said neckrest parallel to said roll;

said gibs being movable on an axis generally normal to the longitudinal axis of said roll;

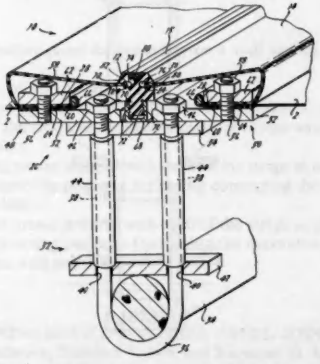
said direct supportive relationship of said gibs comprising a linear path between the axis of said roll and a load bearing surface of said ways.

4,184,294

SEAL FOR AIR SUPPORTED ROOF STRUCTURES

Thomas A. Purvis, Sandusky, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

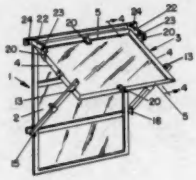
Filed Apr. 14, 1978, Ser. No. 896,321
Int. Cl.[2] E04B *1/34*
U.S. Cl. 52—2 **15 Claims**



1. A weather seal for an air supported roof structure, said roof structure characterized by a plurality of flexible roof panels with edges joined together by clamping means, said weather seal comprising: an elongated sealing strip; a weather resistant flexible membrane having a first edge portion adapted to fit in and be removably secured by said elongated sealing strip and a second edge portion reversely folded under and

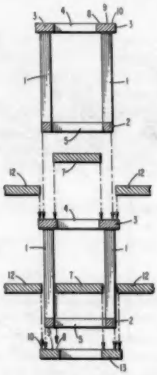
adapted to be secured by said clamping means; and means for attaching said elongated sealing strip to said clamping means.

4,184,295
SUN'S RAYS REFLECTOR AWNING
Gary D. Hicks, 140 23rd Ave. No. 45, Greeley, Colo. 80631
Filed Sep. 28, 1978, Ser. No. 946,630
Int. Cl.[2] F04B *1/346*
U.S. Cl. 52—64 **6 Claims**



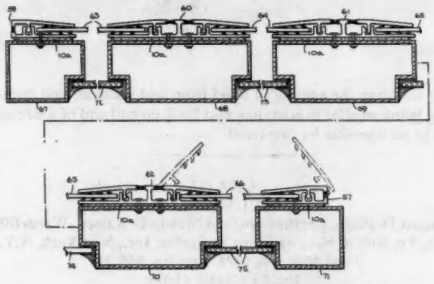
1. In a reflector awning assembly for a windowed structure, a frame, transparent viewing and reflector panel means arranged in said frame, first bracket means on said frame and being longitudinally adjustable for pivotally mounting said frame intermediate the ends of said window, and second bracket means on said frame for selectively mounting said frame at and angularly relative to the upper or lower ends of said window whereby said awning will project outwardly and downwardly therefrom at an angle for reflecting the sun's rays therefrom for cooling the interior of said structure, and upwardly and outwardly therefrom at an angle for reflecting rays thereinto for heating the interior, and whereby viewing through said window will not be impaired.

4,184,296
PREFABRICATED PRISMATIC STRUCTURE FOR BUILDING
Alberto Vitalini, 13840 NE. 11th Ave., North Miami, Fla. 33161
Filed Oct. 18, 1977, Ser. No. 843,446
Claims priority, application Italy, Oct. 20, 1976, 51644 A/76
Int. Cl.[2] E04B *1/348*
U.S. Cl. 52—79.4 **11 Claims**



1. Prefabricated skeletal monolithic concrete building structure comprising at least three pillars connecting a lower base and an upper floor base, said bases having equal polygonal shapes, said upper base defining a lip which overhangs the inside dimensions of the pillars and the lower base and a plurality of U-shaped grooved brackets attached to the outside of the upper base outside of the outer dimensions of the pillars.

4,184,297
EXTRUDED PLASTIC PANEL HOLDING AND JOINTING STRIPS AND WINDOW ASSEMBLIES THEREWITH
Jorge Casamayor, Columbus, Ohio, assignor to Plaskolite, Inc., Columbus, Ohio
Filed Jun. 5, 1978, Ser. No. 912,079
Int. Cl.[2] E06B *3/26*; E04C *2/38*
U.S. Cl. 52—202 **26 Claims**



1. A one piece extruded plastic panel holding strip adapted to join adjacent panels in an array by receiving the side edges of adjacent panels in separate oppositely facing channels in the strip, said strip consisting of:

(A) a base member,

(1) the base member having a rigid "T" shaped member extending from the central portion thereof and essentially dividing the base member into oppositely facing portions;

(2) the base member further including, in each divided portion of the base member, integral longitudinally extending means for releaseably interlocking with an upper member,

(B) two hinge elements, said hinge elements integrally extending from each side of the integral bar crossing the "T" shaped member, the hinge element on each side of the "T" being integrally connecting to an upper member,

(C) two substantially flat rigid upper members, one member extending from each hinge on each side of the "T", and each upper member further including integral means for releaseably interlocking with the base member, said means of the upper member communicable with the means for releaseably interlocking of the base member, each upper member substantially extending in width from the hinge element to the location of the outer edge of the base member opposite the base of the "T",

whereby, when each upper member is interlocked with the base member, two oppositely facing channels adapted to receive the edges of adjacent panels are formed between the upper members and the base member in the portions of said members between the interlocked means for interlocking and the extending widths of the members.

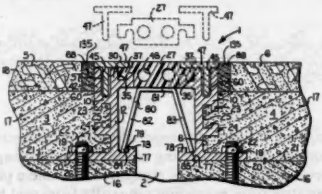
4,184,298
EXPANSION JOINT FILLER STRIP AND COVER ASSEMBLY
Claude P. Balzer, and Edward M. Corman, both of Wichita, Kans., assignors to Balco, Inc., Wichita, Kans.
Filed Sep. 20, 1978, Ser. No. 944,086
Int. Cl.[2] E01C *11/10*; E04B *1/68*
U.S. Cl. 52—396 **8 Claims**

1. An expansion to joint filler strip and cover assembly for a joint formed by spaced structural sections having substantially parallel wall surfaces forming the joint, said assembly comprising:

(a) elongate base members extending along and secured to respective structural sections having a joint therebetween, at least one of said base members having a body portion with spaced apart, upstanding first, second and third wall portions having respective terminating edges and with the

first wall portion being substantially contiguous with the joint forming wall surface of the respective structural section, the first and second wall portions defining an elongate, longitudinally extending recess therebetween and said second and third wall portions defining an elongate, longitudinally extending channel therebetween;

(b) a replaceable, elongate, elastomeric strip traversing said joint and having upper and lower outer surfaces and lateral extending side portions secured relative to respective base members;



(c) an elongate anchor cover member having a plate portion engaged with at least the terminating edge of said second wall portion and said upper outer surface of one side portion of said elastomeric strip;

(d) an elongate tongue on said plate portion of the anchor cover member and extending inwardly therefrom into said channel between said second and third wall portions; and

(e) means in said channel and having interference engagement with said second and third wall portions for retaining the anchor cover member and a side portion of the elastomeric strip on the respective base member.

4,184,299

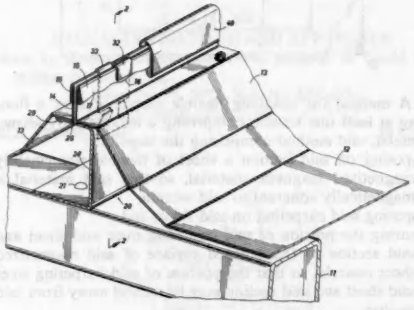
ROOF CONSTRUCTION

James R. East, Spring, Tex., assignor to A & S Building Systems, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 810,113, Jun. 27, 1977, abandoned. This application Apr. 19, 1978, Ser. No. 897,904

Int. Cl.[2] E04D *1/36*

U.S. Cl. 52—463 **8 Claims**



1. In a roof construction having supporting purlins or the like, the combination comprising:

a plurality of generally elongated panels each of which has a matching standing seam portion along the marginal edges of the long sides thereof, each standing seam portions having an edge portion of said panel folded back thereover toward the center of said panel, wherein said edge portion has therein a plurality of recesses, forming downwardly facing shoulders;

a plurality of support clips supported beneath the adjacent seam portions of two adjacent panels for securing said panels to said purlins, said support clips each having a flat upper surface spaced below and perpendicular to the plane of said standing seam portions and with said upper surface having a slot therein;

a plurality of generally spear shaped fastener clips securing said panels to said support clips, each of said fastener clips including a body portion arranged for inserting downwardly between said adjacent standing seam portions and through one of said slots, said fastener clips each including means connected to said body portion for engaging said standing seam portions and means for engaging said support clips after passage of said body portion downwardly through one of said slots;

an elongated seam cap generally in the cross-sectional shape of an inverted U, mounted over said two adjacent standing seam portions and over said associated clips, said cap having means for forming upwardly facing shoulders for engaging said downwardly facing shoulders of said standing seam portions, for securing said cap thereover;

wherein said upwardly facing shoulders of said seam cap form a first sinuous curve, and said downwardly facing shoulders of said standing seam portion form a second sinuous curve, wherein said first and second sinuous curves are of different periods.

4,184,300

DECORATIVE BUILDING PANEL

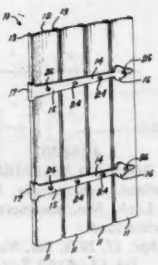
Leo F. Deschamps, Dollard des Ormeaux, Canada, assignor to Kool-Ray Ltd., St. Leonard, Canada

Filed Sep. 18, 1978, Ser. No. 943,128

Claims priority, application Canada, Sep. 28, 1977, 287215

Int. Cl.[2] E04C *2/42*; E06B *7/08*

U.S. Cl. 52—473 **11 Claims**



1. A decorative panel for mounting on a wall surface comprising,

a plurality of slats arranged side-by-side,

at least two spaced apart straps extending across the slats, each of the straps having intersecting positions with each of the slats,

connecting means integral with each of the straps at each of the intersecting positions for rigidly connecting the straps to the slats,

and spacer means integral with each of the straps at each of the intersecting positions for spacing the decorative panel from the wall surface.

4,184,301

FASTENING DEVICE FOR WALL PANEL JOINTS

John W. Anderson, Bradford Woods, and Raymond M. L. Ting, Pittsburgh, both of Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Filed Aug. 9, 1978, Ser. No. 932,332

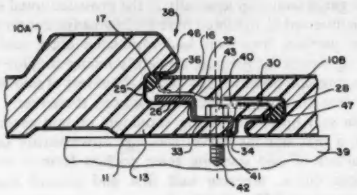
Claims priority, application Spain, Aug. 27, 1977, 230.785[U]

Int. Cl.[2] E04C *1/10, 2/20*; E04B *1/41, 2/72*

U.S. Cl. 52—478 **6 Claims**

1. A joint between adjacent first and second wall panels wherein each panel includes outer and inner skins which are

laterally offset relative to each other and which present first and second gaps along opposite longitudinal sides of the panel, and an insulating core which connects the inner skin in shear-transferring relation to the outer skin and which is exposed at the first and second gaps; said joint comprising: the first panel having a channel formed in the outer skin and extending laterally inwardly of said first gap; a clip member presented at the first gap and including an edge strip extending into said channel, a flange extending into said insulating core at said first gap and presenting a remote end adjacent to said inner skin, and a



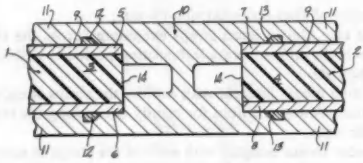
medial strip connecting said flange to said edge strip, said medial strip being generally parallel with said edge strip and disposed between the plane of said edge strip and the plane of said inner skin, and connecting means mechanically connecting said clip to said channel; a fastener extending through said medial strip, said core, and said inner skin and securing the first panel to a structural member; and the second panel having a tongue formed in the outer skin extending laterally outwardly of said second gap, over said edge strip and into said channel of the first panel.

4,184,302

BONDED ASSEMBLY

Anatole M. Gurewitsch, Schenectady, N.Y., and Robert W. Weidemann, St. Louis, Mo., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 17, 1978, Ser. No. 896,828
Int. Cl.[2] F16B *5/00*
U.S. Cl. 52—582 **12 Claims**



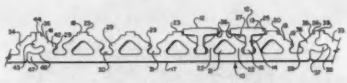
1. A firmly joined composite which comprises: two sheet-like objects to be joined each of which has flat external surfaces and adjacent edge portions; an H shaped joining member having a substantially flat external configuration, a central portion adjacent said edge portions and having extended arms emanating from said central portion engaging each of said external surfaces of both of said objects; and retaining members between and engaging at least a portion of each of the engaging surfaces of said extended arms and having a band with said external surfaces and seated in at least one of said engaging surfaces to form a direct bond between each of the engaging surfaces of said arms and external surfaces to provide a firm joint between the joining members and external surfaces.

4,184,303

CONNECTING MEMBER FOR CONSTRUCTING FLOORS

Kenneth Hassman, 267 Froom Cres., Regina, Saskatchewan, Canada

Filed Aug. 17, 1978, Ser. No. 934,313
Claims priority, application Canada, Aug. 23, 1978, 304917
Int. Cl.[2] E04C *2/42*
U.S. Cl. 52—669 **17 Claims**



1. A support member for supporting and connecting structural members such as flooring members comprising an integral one-piece body having an elongated base and a plurality of supporting structures extending upwardly from said base, each support structure having a relatively wide bottom and a narrow upper section, said upper section having support means formed on each transverse side thereof for supporting an upper, side edge of a structural member, wherein said base and the transverse sides of adjacent bottoms of said support structures form a groove for receiving and supporting a bottom edge of one of the structural members.

4,184,304

METHOD FOR INSTALLING A FLOOR COVERING OVER METAL DUCTS OR PLATES

Hamir D. Merchant, Simpsonville, S.C., assignor to Bigelow-Sanford, Inc., Greenville, S.C.

Filed Apr. 20, 1978, Ser. No. 898,282
Int. Cl.[2] E04B *5/48*
U.S. Cl. 52—746 **3 Claims**

1. A method for installing flexible carpeting over a floor having at least one section comprising a magnetically attractive metal, said method comprising the steps of:
disposing on said section a sheet of flexible permanently magnetized magnetic material, so that said material is magnetically adherent to said section;
disposing said carpeting on said floor; and
securing the portion of said carpeting over said sheet and said section to the exposed surface of said magnetized sheet material so that the portion of said carpeting over said sheet and said section may be moved away from said section.

4,184,305

MACHINE FOR APPLYING TRANSFERS

Max N. Baker, Rural Hall, and Julian R. Martin, Winston-Salem, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

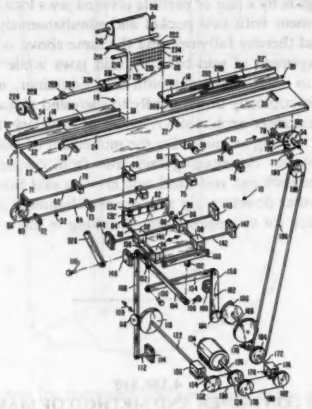
Division of Ser. No. 678,263, Apr. 19, 1976, Pat. No. 4,101,362.
This application Feb. 21, 1978, Ser. No. 879,412
Int. Cl.[2] B65B *61/20, 57/04*
U.S. Cl. 53—50 **26 Claims**

1. Apparatus for applying transfers to a plurality of sets of packages, comprising:
a transfer sheet carrying sets of transfers arranged in rows

and columns, said transfer sheet being longitudinally movable and laterally stationary;

conveyor means for periodically and sequentially advancing spaced sets of packages along a single path laterally past said transfer sheet;

adjustable means for halting each said set of packages at a selected one of a plurality of locations with respect to said transfer sheet, each set of packages being halted at a location that is selectively positioned with respect to a corresponding set of transfers;



a movable platen;

means for shifting said movable platen laterally with respect to said transfer sheet for alignment with said corresponding set of transfers for each set of packages at its selected location; and

means for reciprocating said platen to carry said corresponding set of transfers into engagement with its corresponding set of packages.

4,184,306

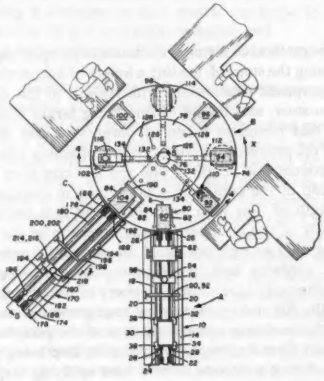
PACKAGING METHOD AND APPARATUS

John L. Grasson, Brecksville, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 5, 1977, Ser. No. 857,637

Int. Cl.[2] B65B *5/02, 5/08, 5/10, 5/12*

U.S. Cl. 153—240 **28 Claims**



1. Apparatus for nesting at least one workpiece in a base member which is comprised of a deformable material having spaced apart generally top and bottom faces, said apparatus comprising:

means defining a work path for supporting said base member at said bottom face and including means for selectively driving said base member sequentially between a plurality of precise work stations disposed at spaced intervals along said work path;

work performing means disposed adjacent said work path at least at selected ones of said work stations and adapted to be selectively moved into and out of a work performing relationship with at least one of said base member and workpiece located at said selected work station for performing nesting operations thereon wherein said work performing means are mounted to frame means which is adapted to be selectively movable generally transverse to the plane defined by said work path between a first non-work performing relationship spaced from said work path and a second work performing relationship spaced toward said work path from said first relationship for obtaining the ultimately desired nested relationship of said workpiece in said base member; and,

means for selectively moving said work performing means into and out of said work performing relationship at least when said base member is located in a work station having one of said work performing means associated therewith.

4,184,307

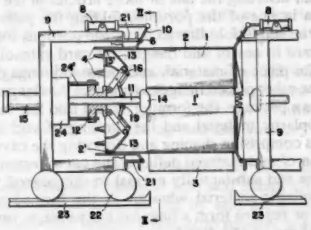
DEVICE FOR WRAPPING THE ENDS OF ROLLS

Hiroshi Kataoka, 5-8 Asahi 1 chome, Iyo-Mishima-shi, Ehime-ken, Japan

Filed Sep. 5, 1978, Ser. No. 939,489

Int. Cl.[2] B65B *7/14*

U.S. Cl. 53—380 **3 Claims**



1. A device for wrapping up the ends of a roll in a wrapping paper which has been wrapped to encircle the roll and which being longer than the roll extends cylindrically from both ends thereof, which device comprises:

a set of tucking members at either end of said roll, said tucking members being disposed at given intervals on the outer peripheral surface of said wrapping paper extending cylindrically from the ends of said roll,

wrapping paper operation means for simultaneously moving said tucking members toward the center of the ends of said roll,

a set of projecting members at either end of said roll, said projecting members being disposed on the inner peripheral surface of said cylindrically protruding wrapping paper at positions falling between the tucking members,

means for simultaneously puckering up said projecting members in proportion as said tucking members are moved toward the center of the ends of said roll and for causing said projecting members to escape from the inner surface of said cylindrically protruding wrapping paper before said tucking members come into contact with the ends of said roll,

means for laying flat the wrapping paper ridged between the adjacent tucking members by said projecting members

when said tucking members come into contact with the ends of said roll, and

means for pushing into a central hole of said roll the portions of said wrapping paper which stop up said central hole when said ridged portions are laid in one direction.

4,184,308

METHOD OF FORMING A PACKAGE FOR PRODUCTS AND THE RESULTING PACK

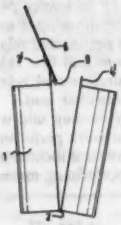
Anthony J. Sharp, Aylesham, England

Filed Oct. 21, 1977, Ser. No. 844,399

Claims priority, application United Kingdom, Oct. 25, 1976, 44230/76; Dec. 15, 1976, 52310/76

Int. Cl.[2] B65B *61/14, 43/10*

U.S. Cl. 53—413 2 Claims



1. A method of packaging one or more articles comprising the steps of forming a single transverse fold line in a piece of sheetform semi-rigid or rigid thermoplastic material so as to divide the piece of material into portions, forming one or more cavities for the one or more articles in at least one of the portions and having a flange at opposite ends of the piece of material, inserting the one or more articles in the one or more cavities in one of the portions, folding the piece of material about the single fold line to bring the portions together, affixing a card to one of said flanges, the card extending outwards from the piece of material, and releasably engaging the card with the other of said flanges to connect the flanges together to provide a package, the forming of said fold line in the piece of thermoplastic material and the forming of said one or more cavities comprising shaping and disposing the cavity such that a region of said material defining the cavity extends along the fold line and substantially normal to the general plane of the thermoplastic material whereby in the formed package said region or regions form a base for the package, on which base the package can be stood.

4,184,309

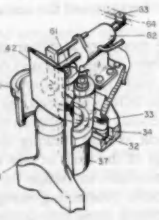
METHOD AND APPARATUS FOR ASSEMBLYING TUBULAR SLEEVE PREFORMS AND CONTAINERS

Stephen W. Amberg, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 2, 1978, Ser. No. 930,306

Int. Cl.[2] B65B *13/00*

U.S. Cl. 53—399 25 Claims



16. The method of assemblying heat-shrinkable tubular bands on the neck portion of containers comprising the steps of delivering serially to a rotary turret machine individual containers in upright spaced-apart relation, positioning each of said containers within a container-receiving pocket for movement at least partially around said rotary turret machine, retaining a substantial number of said tubular bands in flattened, nested condition in a suitable holder with one open end lowermost, delivering an individual tubular band to a tangential position above said container retained within said pockets on said rotary turret machine, engaging said container at an upper neck region by a pair of partible pivoted jaws located above an in alignment with said pocket and simultaneously contacting said band thereby fully opening the same above said container by engagement of said band by said jaws while moving the band into axial alignment with said container, moving said band telescopically downwardly to surround at least a portion of the container neck while retained by said jaws therebelow, said jaws acting as guides for the movement of said band onto said container disengaging said jaws from contact with said container neck and said band, and moving said band telescopically further downwardly into precise alignment on said container neck for subsequent heat-shrinking in place thereon.

4,184,310

SEALED CONTAINER AND METHOD OF MAKING THE SAME

Richard K. Shelby, 160 Briarwood North, Oak Brook, Ill. 60521

Filed Apr. 5, 1978, Ser. No. 893,762

Int. Cl.[2] B65B *7/28, 61/18;* B67B *3/04*

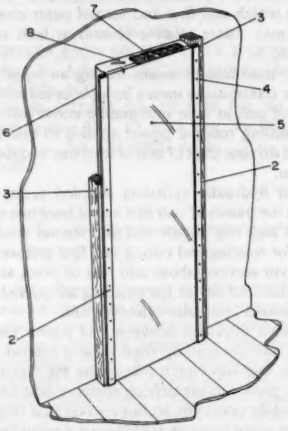
U.S. Cl. 53—412 6 Claims

1. The method of forming a closure in an open top container comprising the steps of: feeding a length of heat-shrinkable film into superposed relationship with respect to the open top of said container, said length of film being larger than the open top of said container whereby corners of said film project beyond the periphery of said open top, effecting relative movement between said length of film and said container so that the upper end of the container is positioned in engagement with said length of film with portions of the film being disposed outwardly of the periphery of the open top of the container, grasping only a single corner of the outwardly extending film portion, applying heat to the outwardly extending film portions completely around the periphery of the container to heat shrink the film into compressive engagement with the upper end of the container completely around the periphery thereof to thereby form a closure, said grasping step being performed at least during a portion of said heat applying step whereby heat shrinking of the grasped film corner is retarded, and releasing the grasped film corner to provide a single pull tab for said closure.

4,184,311
FIRE RETARDANT INSULATION

Leonard D. Rood, 5764 Flintlock La., Columbus, Ohio 43213

Continuation-in-part of Ser. No. 781,156, Mar. 25, 1977, abandoned. This application Jan. 11, 1978, Ser. No. 868,677
Int. Cl.[2] B65B *31/00*; A62D *1/00*; C09D *5/14*; B02C *1/00*
U.S. Cl. 53—434 25 Claims



1. A method for preparing and packaging flame retardant thermal insulation comprising:
(a) shredding dry paper;
(b) feeding said dry paper into a hammer mill shredder;
(c) depositing the shredded output of the hammer mill into a mixing bin;
(d) mixing a dry, powdered, phosphorous-containing composition selected from the group consisting of phosphates and phosphites which decomposes in a temperature range of 120° C. to 250° C. to evolve phosphoric acid with said shreaded paper to effect the coating of said paper with said powder;
(e) blowing said dry, powdered phosphorous-containing composition into said mixing bin to effect the intimate coating of the surface of said shredded paper with said composition;
(f) transferring said coated shredded paper through an auger device to effect the enveloping of said coated shredded paper wherein the envelope used is an elongated plastic envelope and is capable of holding a vacuum;
(g) drawing a vacuum on said plastic envelope to effect compression of said insulation material; and
(h) sealing said envelope while said envelope is under vacuum.

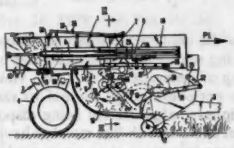
2. A flame retardant, thermal insulation material comprising:
(a) dry, shredded, cellulosic material; and
(b) a substantially dry, powdered, flame retardant composition which includes a plurality of compounds which are phosphorous containing compounds selected from the group consisting of phosphates and phosphites which decompose at a plurality of different temperatures spaced within a temperature range of substantially 120° Celsius to 250° C. to evolve phosphoric acid and other agents which retard the exothermic oxidation of said cellulosic material and decomposition products thereof, said composition being distributed on the surface of said shredded material.

15. A flame retardant for a dry, shredded, cellulosic, thermal insulation material, said retardant comprising a substantially dry, powdered, phosphorous-containing, flame retardant composition which decomposes to evolve phosphoric acid substantially at the temperatures at which the insulation material has sufficient thermal feedback to sustain its rapid oxidation wherein said composition comprises calcium phosphate or dry powered triple super phosphate or both and at least one other flame retardant compound which decomposes at a temperature different from said phosphate.

4,184,312
BALING DEVICE FOR AGRICULTURAL CROPS

Pieter A. Oosterling, Nieuw-Vennep, and Adriaan Van Zweeden, Rijsenhout, both of Netherlands, assignors to Expert N.V., Curacao, Netherlands Antilles

Filed Mar. 21, 1978, Ser. No. 888,737
Claims priority, application Netherlands, May 13, 1977, 7705350; Sep. 9, 1977, 7709962
Int. Cl.[2] A01D *39/00*
U.S. Cl. 56—341 11 Claims



1. A device for baling a crop such as grass or the like, comprising in combination:
a mobile frame defining a generally horizontal baling chamber having an end wall against which the crop is to be compressed and having an inlet opening spaced from said end wall;
a ram reciprocable within said baling chamber toward and away from said end wall and drive means for reciprocating said ram between a retracted position clearing said inlet opening and an extended position adjacent said end wall;
an auxiliary chamber communicating at one end with said inlet opening and crop pick-up and feeding means at the other end of said auxiliary chamber for continuously feeding crop which is picked up into said auxiliary chamber;
transfer means for periodically transferring crop accumulated in said auxiliary chamber into said baling chamber, said transfer means being driven by said drive means in one direction only whereby said crop transfer is effected during retracting movement of said ram; and
at least one retaining member movable into said baling chamber in response to movement of said ram from its extended position and movable out of said baling chamber only when said ram is substantially in its extended position to retain the crop in compressed state as the ram moves toward said retracted position and to engage crop being compressed by the ram until said ram moves into said extended position.

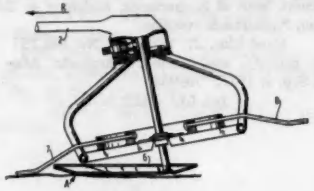
4,184,313
AGRICULTURAL IMPLEMENT COMPRISING ROTATABLE WORKING MEMBERS AND AN IMPROVED SUPPORTING MEMBER FOR THE SAME

Berend Broijl, 26, Prinses Irenestraat, Kloetinge, Netherlands, and Nicolaas vanderPlas, Salvelstraat 152, Sterrebeek, Belgium

Continuation of Ser. No. 528,557, Nov. 29, 1974, abandoned. This application May 10, 1976, Ser. No. 685,101
Int. Cl.[2] A01D *79/00*
U.S. Cl. 56—370 3 Claims

1. In an agricultural implement having a frame adapted to be attached to a powered vehicle, a shaft fixed to and depending downwardly from said frame, a cropworking member rotatably supported by aid shaft, said member having a plurality of

generally radially projecting teeth which sweep through a path which at a point displaced radially from said axis is closest to the ground surface, the improvement which comprises a generally horizontally disposed, dish-like groundengaging member disposed beneath said crop-working member and displaced from said axis in a direction toward said point whereby said ground-engaging member engages the ground near said point



so as to allow the implement closely to follow ground contour without causing said point to engage the ground, said dishlike member being of generally circular plan view and being fixed adjacent one peripheral edge thereof to said shaft with the opposite peripheral edge thereof being disposed closely adjacent said point and said dish-like member having a substantially flat bottom lying in a plane at an acute angle to said shaft and extending from said shaft to adjacent said point.

4,184,314

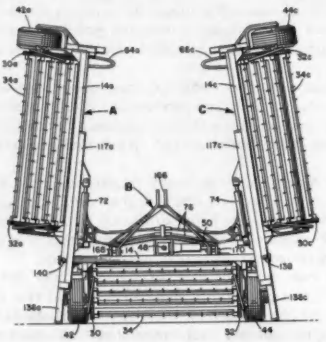
FOLDABLE TRI-SECTION VINE FLUFFER

Oliver K. Hobbs, P.O. Box 1306, Suffolk, Va. 23434

Filed Feb. 21, 1978, Ser. No. 879,490

Int. Cl.[2] A01D *29/00*

U.S. Cl. 56—372 **3 Claims**



1. A foldable vine fluffing apparatus comprising:

a first and second outer vine conveyor sections and at least one middle vine conveyor section, each section comprising:

a frame assembly;

a pair of endless parallel transporting chains mounted in said frame assembly;

a plurality of parallel rods having opposite ends connected with said chains, said rods being spaced along said chains and each having a plurality of pins extending in a direction outward of said rods; said rods, associated pins and chains forming a vine conveying mechanism having an input located adjacent the ground level and an output spaced above the ground level; and,

a driving shaft coupled to a pair of sprockets engaged respectively with said chains, said driving shaft being adapted to rotate said endless transporting chains and connected rods;

means for pivotably coupling the frame assembly of said first and second outer conveyor sections with the frame assembly of said at least one middle section about respective first and second pivot points;

a pair of universal joints respectively coupling the driving shafts of said first and second outer conveyor sections with the driving shaft of said at least one middle conveyor section, said universal joints forming along with said first and second pivot points a pair of pivot axes about which said first and second outer conveyor sections may rotate relative to said at least one middle section;

a power transmission means having an input shaft, said power transmission means being coupled to the driving shaft of said at least one middle conveyor section for transmitting rotative power applied to said input shaft to said driving shaft of said at least one middle conveyor section;

a pair of hydraulic cylinders coupled respectively between the frames of said first and at least one middle and said at least one middle and said second conveyor sections for rotating and raising said first and second outer conveyor sections about said pair of pivot axes;

a hydraulic fluid device for coupling an applied hydraulic fluid to said hydraulic cylinders; and

a slip clutch provided between said power transmission means and the driving shaft of said second conveyor section, said slip clutch preventing the transmission of motive power to the driving shafts of said first, second and middle conveyor sections when said first and second conveyor sections are between a partially and fully raised position.

4,184,315

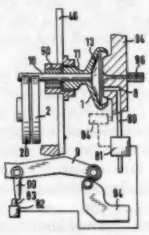
APPARATUS FOR SUPPLYING COMPRESSED AIR IN ARRESTING THE ROTOR OF AN OPEN END SPINNING DEVICE

Erwin Braun, and Erich Bock, both of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,655

Int. Cl.[2] D01H *7/22, 1/24*

U.S. Cl. 57—89 **4 Claims**



1. Apparatus for bringing to rest a rotor of an open-end spinning apparatus, a cover extending over said rotor, said rotor having an inner wall and a shaft, a wedge gap formed by freely rotatable support rollers, said shaft being carried in said wedge gap, an axial stop, a tangential belt driving said shaft and pressing said shaft against said support rollers wherein an axial force arising from the support rollers presses said rotor shaft against said axial stop, a movable lever for initiating the bringing to rest of said rotor, a plurality of stops constructed as support mountings, and means for moving said shaft away from said support rollers into contact with said stops for stopping the rotation of said shaft, the improvement comprising:

a source of compressed air;

an air nozzle carried in said cover and being directed towards said inner wall of said rotor;

a feed duct connecting said source of compressed air to said air nozzle;

a valve means interposed in said feed duct; and

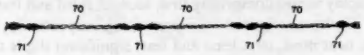
means for opening said valve means allowing compressed air to be fed through said nozzle striking said inner wall of said rotor forcing said shaft against said axial stop when said lever is initiated to bring said rotor to rest.

4,184,316

PRODUCTION OF NOVELTY YARNS

Ernest J. Griset, Jr., Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 722,881, Sep. 13, 1976, Pat. No. 4,080,777.
This application Mar. 17, 1978, Ser. No. 887,611
Int. Cl.[2] D02G *3/34*
U.S. Cl. 57—295 **9 Claims**



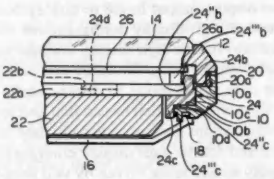
1. An apparatus for producing a novelty yarn having pronounced variations in linear density which comprises a fluid tangling means, means for introducing at least one multifilament yarn into said tangling means at a first predetermined rate, a reciprocating means for alternatingly positively and abruptly tensioning and relaxing the yarn being introduced into said tangling means by intermittently and abruptly changing the path of the yarn whereby said yarn is stretched during tensioning and abruptly made slack during relaxing to form sequential alternative segments of compact and fluffed filaments, and means for withdrawing the yarn from said tangling means at a second predetermined rate.

4,184,317

WATCH MOVEMENT MOUNTING STRUCTURE

Nobuyuki Kanda, Tokorozawa, and Yasuo Kamiyama, Sayama, both of Japan, assignors to Citizen Watch Co., Ltd., Japan

Filed Dec. 22, 1977, Ser. No. 863,413
Claims priority, application Japan, Dec. 27, 1976, 51-176709[U]; Jun. 24, 1977, 52-82452[U]
Int. Cl.[2] G04B *37/08, 37/04*
U.S. Cl. 58—90 R **9 Claims**



1. A watch movement mounting structure for fixing a watch movement having an annular flange in a watch case having a case body including a radially extending annular shoulder and a radially inwardly extending annular projection contiguous with the annular shoulder, comprising:

a flexible annular support member including an annular wall adapted to rest on the annular shoulder of said body, a plurality of circumferentially spaced, inwardly directed flange segments each of which extends upwardly of the annular wall to retain the watch movement, and a plurality of circumferentially spaced, outwardly directed flange segments each of which extends downwardly of the annular wall and adapted to engage the annular projection of the case body, whereby said watch movement is fixed in place in said case body and the axial displacement of the watch movement is prevented;

each of said plurality of circumferentially spaced, inwardly directed flange segments including a radially inwardly facing recess adapted to engage the annular flange of said watch movement, and a hook portion formed adjacent said recess and engaging an upper surface of the annular flange of said watch movement; and

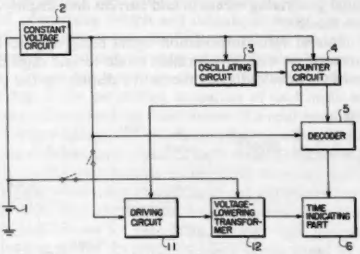
each of said plurality of circumferentially spaced, outwardly directed flange segments including a radially outwardly facing recess adapted to engage the annular projection of said case body, and a hook portion formed adjacent said recess and engaging a lower surface of said annular projection.

4,184,318

TIME INDICATING DEVICE FOR ELECTRONIC DIGITAL TYPE CAR CLOCKS

Tsuyoshi Tsuchiya, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 961,367
Claims priority, application Japan, Nov. 22, 1977, 52-140381
Int. Cl.[2] G04C *3/00*
U.S. Cl. 58—23 BA **1 Claim**



1. In an electronic digital type clock using a battery of an automobile as a current source and including a time counting part and a time indicating part, a time indicating device comprising an oscillating circuit using said battery as a current source, an integrating circuit for integrating a signal from said time counting part to issue a triangular wave signal, a comparing circuit for comparing the output signal from said integrating circuit with a predetermined reference voltage to issue a rectangular wave signal, and a transformer for reducing the output from said comparing circuit, and being arranged so that the output from said transformer is fed to said time indicating part, and that the duty ratio of the output from said comparing circuit is varied by changing said reference voltage.

4,184,319

DIGITAL DISPLAY TYPE ELECTRONIC TIME PIECE

Kiyoshi Kumata, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1977, Ser. No. 814,418
Claims priority, application Japan, Jul. 7, 1976, 51-81328
Int. Cl.[2] G04B *19/24;* G04C *17/02*
U.S. Cl. 58—50 R **39 Claims**

1. A digital display type electronic time piece, comprising:

means for generating a time reference signal;

means responsive to said time reference signal for generating a horological information signal representative of the current time information, said horological information signal generating means comprising first horological information signal generating means for generating a first horological information signal representative of the current time and second horological information signal generating means for generating a second horological information signal representative of the current date, said first horological information signal comprising a numeral value information signal representative of the current time by the use of a combination of numeral characters, said

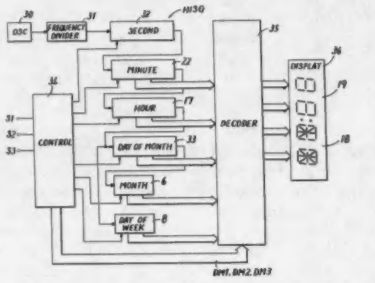
second horological information signal comprising a week information signal representative of the current date in terms of the day of the week by the use of a language alphabet character;

means responsive to said horological information signal generating means for displaying said current time information, said display means comprising a plurality of digit display positions, each being adapted for selectively displaying numeral characters in response to said numeral value information signal, at least a portion of said plurality of said digit display positions being further adapted for selectively displaying a language character in response to said week information signal;

means for selecting a display operation mode of said electronic watch, said display operation mode comprising a current time display operation mode and a current date display operation mode;

selective response means responsive to said display operation mode selecting means for selectively making said display means responsive to said first horological information signal generating means in said current time display operation mode and for selectively making said display means responsive to said second horological information signal generating means in said current date display operation mode;

said numeral value information signal being applied in said current time display operation mode to said digit display positions of said display means for displaying the current



time by the use of combination of numeral characters, said week information signal being applied in said current date display operation mode to said numeral/language character displaying portion of said plurality of digit display positions of said display means for displaying the current date in terms of the day of the week by the use of a language character;

said first horological information signal generating means comprising first means for decoding said first horological information signal to a numeral character signal representative of said current time in terms of said numeral characters;

said second horological information signal generating means comprising second means for decoding said second horological information signal to an alphabet character signal representative of said day of the week in terms of said alphabet character of said language;

said alphabet character for said week information signal comprising alphabet characters of at least two kinds of languages;

said second decoding means being adapted to be responsive to a language kind selecting signal to selectively decode said second horological information signal to one of at least two kinds of alphabet character signals representative of said day of the week in terms of said alphabet characters of one of said at least two kinds of languages;

input signaling means for providing an input signal to said time piece;

means operatively coupled to said input signaling means and responsive to said input signal for selectively providing to each of said first and second horological information signal generating means a correction mode selecting signal;

means operatively coupled to said input signaling means and said correction mode selecting signal providing means for determining when said input signal is of a duration longer than a predetermined time period for providing an input signal; and

means responsive to the output of said duration determining means and said correction mode selecting signal providing means for providing said language kind selecting signal to said second decoding means in a cyclically recurrent mode to constrain the latter to provide said alphabet character signal in each of said kinds of languages.

33. A digit display type electronic time piece comprising:

digit display means comprising first, second, third and fourth digit display configurations representing, respectively, the most, next most, next least and least significant digits of a display format;

said digit display means further comprising a punctuation display configuration between said second and third digit display configurations;

said first and second digit configurations comprising alphanumeric display configurations for selectively displaying hours, days and months and said third and fourth digit display configurations comprising numeric display configurations for selectively displaying minutes and daily dates;

time and date signal generating means for generating encoded time and date signals;

said date signals including day of the week identification and daily date information in a first date signal mode and including month identification and daily date information in a second date signal mode;

said time signals being numeric in character and said date signals being alphanumeric in character;

decoder means responsive to said time and date signals for generating display control codes;

mode control means selectively enabling said decoder means and said time and date signal generating means into time and date display output modes;

said digit display means being driven by said decoder means in said time display output mode to display hours in said first and second digit display configurations and minutes in said third and fourth digit display configurations;

said digit display means being driven by said decoder means in said first date signal mode to display alpha character day of the week identification in said first and second digit display configurations and numeric daily date information in said third and fourth digit display configurations; and

said digit display means being driven by said decoder means in said second date signal mode to display alpha character month identification in said first and second digit display configurations and numeric daily date information in said third and fourth digit display configurations; and

said digit display type electronic time piece further including:

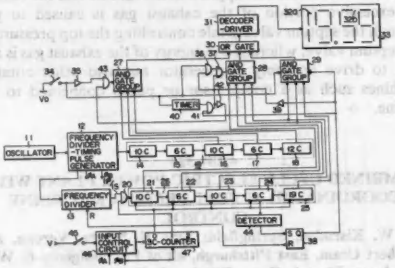
language selection signal generating means for generating cyclically recurrent language signals each representing a kind of language in which said alpha character day of the week and month identifications are to be presented;

said decoder means being responsive to said cyclically recurrent language signals for enabling said first and second digit display configurations of said display means to display cyclically said day of the week identification and said month identification, respectively, in said first and second date signal modes in each of the particular selected languages represented by said language signals.

4,184,320
ELECTRONIC STOP WATCHES

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 689,804, May 25, 1976, abandoned. This application Apr. 5, 1978, Ser. No. 893,785
Claims priority, application Japan, May 30, 1975, 50-65121
Int. Cl.[2] G04F 7/04
U.S. Cl. 58—74 14 Claims



1. An electronic stopwatch comprising:

means for generating reference clock pulses;

means for supplying a time count start instruction to start operation of the stopwatch function of the stopwatch;

time counting means coupled to said generating means and to said supplying means and adapted to start to count the reference clock pulses in response to a given time count start instruction from said supplying means, said time counting means including a plurality of time counting units for counting time in different units of time, said different units of time including at least small units of time and large units of time which are larger than said small units of time, said time counting means counting time in the smallest units of the time first and the largest units of time last;

digital display means coupled to said time counting means and having a restricted number of display digits capable of displaying only some, but not all, of said different units of time, said display digits being supplied by said time counting means with count values in said small units of time responsive to generation of said given time count start instruction;

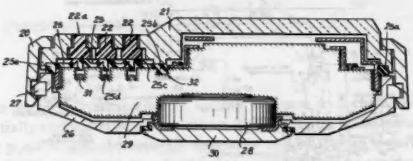
detection means coupled to said time counting means for detecting that the count value in said small units of time in said time counting means has reached a predetermined count value which can be displayed by said digital display means after generation of said given time count start instruction and for generating a detection signal responsive to said detection; and

changeover means coupled to said detection means for automatically causing said display digits of said display means to display the cumulative count value from the initial time count start instruction in said large units of time instead of the count value in said small units of time, in response to a detection signal from said detection means thereby continuing to display the cumulative time being counted by the stopwatch from the initial time count start instruction.

4,184,321
ELECTRONIC WRISTWATCH WITH CALCULATOR HAVING IMPROVED CONDUCTIVE PACKING SHEET SWITCH ELEMENT

Yasutaka Tarusawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Toyko, Japan

Filed May 20, 1977, Ser. No. 798,959
Claims priority, application Japan, May 20, 1976, 51/64231[U]
Int. Cl.[2] G06F 3/02, 15/02; H01H 9/04
U.S. Cl. 58—152 R 17 Claims



1. A digital display electronic wristwatch having a calculator therein comprising watch and calculator body means including display means and multi-input means; watch case means adapted to permit viewing of said display means and including at least ten openings therethrough for defining a keyboard region for permitting actuation of said multi-input means; and a unitary packing sheet means of a resilient material positioned intermediate said watch case means and said multi-input means disposed over the keyboard region and having an electrically conductive surface on the side disposed towards said multi-input means and further having a peripheral lip of a larger thickness than the keyboard region positioned around said multi-input means for providing a water-tight seal about said watch case means openings by being compressed by said watch case means, and a portion of said packing sheet disposed over the keyboard region of said multi-input means adapted for manipulation through said openings to effect selective actuation of said multi-input means, said packing sheet means formed with a hollow frusto-conical projection for each opening in the keyboard region, said projections projecting from said sheet toward said openings and a finger projection from each said projection towards and in registration with each of said multi-input means, whereby manipulation of a projection through the associated openings displaces said finger to the associated multi-input means for making contact with said multi-input means for the selective actuation of said multi-input means, said finger returning to its original position upon the release of said projection due to the resiliency of the packing sheet.

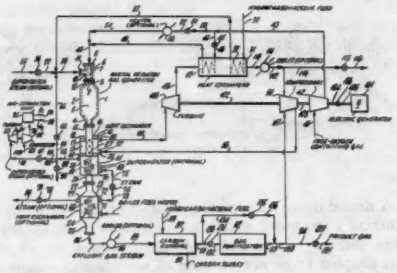
4,184,322
PARTIAL OXIDATION PROCESS

Peter L. Paull, Weston, Conn., and Rodney McGann, Santa Cruz, Calif., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 698,438, Jun. 21, 1976, Pat. No. 4,099,383. This application Nov. 29, 1977, Ser. No. 855,642
Int. Cl.[2] F02G 3/00
U.S. Cl. 60—39.02 37 Claims

1. In the process for producing gaseous mixtures comprising H_2, CO and containing at least one member of the group H_2O, CO_2, H_2S, COS, CH_4, N_2, A, and particulate carbon, by the partial oxidation of a nydrocarbonaceous fuel, or liquid oxygenated hydrocarbonaceous fuel, or a slurry of solid carbonaceous fuel and water or a liquid hydrocarbon, with a free-oxygen containing gas and optionally in the presence of a temperature moderator, at a temperature in the range of about 1500° to 3500° F. and a pressure in the range of about 1 to 250 atmospheres absolute in the reaction zone of a free-flow noncatalytic gas generator, the improvement comprising: (1) continuously passing the raw effluent gas stream leaving the reaction zone of said gas generator through a first heat exchange zone

comprising a shell and tube heat exchanger in heat exchange with a continuous stream of a gaseous heat transfer fluid from step (6), thereby cooling said hot effluent gas stream while simultaneously heating said gaseous heat transfer fluid; (2) continuously bleeding a portion of said gaseous heat transfer fluid into said hot stream of effluent gas in (1) by way of openings in the walls of said tubes, while placing a sheath or curtain of gaseous heat transfer fluid between the surface of said tubes and said stream of effluent gas; (3) cleaning and optionally purifying the mixture of effluent gas and said bleedstream portion of gaseous heat transfer fluid in a gas cleaning and



purifying zone, producing a product gas stream; (4) introducing the stream of heated gaseous heat transfer fluid leaving said first heat exchange zone in (1) into a power developing means as the working fluid and thereby producing power; (5) cooling the exhaust stream of gaseous heat transfer fluid leaving the power developing means in (4) and compressing at least a portion of said cooled stream and at least a portion of the product gas stream from (3) to a pressure above that of the raw effluent gas stream in (1); and (6) recycling the compressed mixture of gases from (5) into the first heat exchange zone in (1) as said gaseous heat transfer fluid.

4,184,323

METHOD AND APPARATUS FOR RECOVERING ENERGY POSSESSED BY EXHAUST GAS FROM BLAST FURNACE BY TURBINE

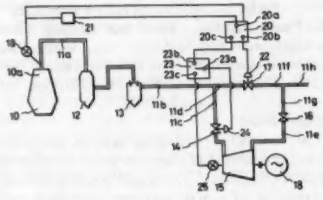
Setsuo Abe, Tokyo; Tomomi Asakura, Kisarazu; Takeshi Shirato, and Motomasa Miyake, both of Tamano, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd. and Nippon Steel Corporation, both of Tokyo, Japan

Filed Dec. 20, 1977, Ser. No. 862,588

Claims priority, application Japan, Dec. 20, 1976, 51/153984

Int. Cl.[2] F02C 9/02

U.S. Cl. 60—39.03 **7 Claims**



1. A method for recovering energy of an exhaust gas from the top of a blast furnace comprising removing dusts from said exhaust gas by a dust precipitator, branching the dust-removed exhaust gas into two gas streams, supplying one stream to a septum valve while supplying the other stream to a turbine, and recovering the energy of the exhaust gas by a generator connected to the turbine while controlling the top pressure of the blast furnace depending on the flow rate of the exhaust gas passing through the septum valve and/or turbine, said energy recovery method being characterized in that the turbine capacity is set at a predetermined mean flow rate of the exhaust gas and a mechanism for operating said septum valve and a governor valve for the turbine are connected selectively exchangeably in response to a signal indicating the top pressure of the blast furnace which corresponds to the flow rate of the exhaust gas at the furnace top so that when the flow rate of the exhaust gas is lower than said mean value, the septum valve is completely closed to supply all the exhaust gas to the turbine while controlling the top pressure by the governor valve of the turbine and that when the flow rate of the exhaust gas is higher than said mean value, the exhaust gas in an amount corresponding to said mean value is supplied to the turbine and the remaining excessive portion of the exhaust gas is caused to pass through the septum valve while controlling the top pressure by the septum valve, whereby the energy of the exhaust gas is also used to drive not only a generator but also other rotating machines such as a compressor or pump connected to the turbine.

4,184,324

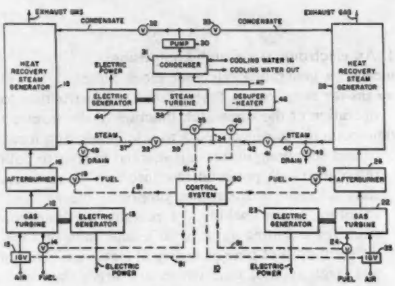
COMBINED CYCLE ELECTRIC POWER PLANT WITH COORDINATED PLURAL FEEDBACK TURBINE CONTROL

Roy W. Kiscaden, Springfield; Lyle F. Martz, Verona, and Robert Uram, East Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 2, 1975, Ser. No. 564,562

Int. Cl.[2] F02C 7/02

U.S. Cl. 60—39.18 B **12 Claims**



1. A control system for controlling a combined cycle electric power plant, said plant having a plurality of gas turbines, at least one steam turbine, a heat recovery steam generator connected to deliver steam to said steam turbine, and at least two afterburners connected to receive exhaust gas from responsive gas turbines and deliver heated exhaust gas to said steam generator, said control system comprising:

a. a plurality of control modes for controlling a selected configuration of said turbines and afterburners;

b. means for operator selection of one of said control modes for controlling each of said turbines and afterburners;

c. plant monitoring means interconnected with said control system, said system having means for automatically switching the selected mode control configuration as a function of monitored plant operating conditions;

d. said plurality of control modes providing respective levels of automatic control, the highest level mode comprising a first control path for determining gas turbine load control signals for control of said gas turbines as a function of the difference between plant load demand and the steam turbine load, a second control path for determining a setpoint control signal for control of said afterburners, and a third path generating a plant load error signal as a function of the difference between monitored plant load and desired plant load, and means for incorporating said error

signal into said first and second paths to modify the respective determined control signals.

4,184,325

PLANT AND PROCESS FOR RECOVERING WASTE HEAT

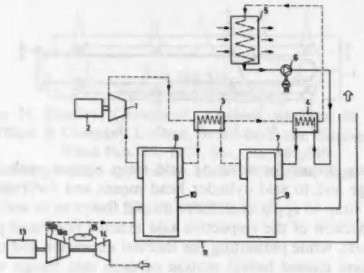
Charles Mandrin, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jun. 23, 1977, Ser. No. 809,399

Claims priority, application Switzerland, Dec. 10, 1976, 15564/76; Apr. 4, 1977, 4112/77

Int. Cl.[2] F02C *7/02*

U.S. Cl. 60—39.18 R **18 Claims**



1. The combination comprising

an open gas turbine plant having an exhaust duct for exhausting hot combustion gases;

a vapor circuit system including a condenser for condensing a flow of working medium, at least one pump for pumping the flow of working medium in said circuit system, a heater for heating the flow of working medium in said circuit system, and an expansion machine for expanding the heated flow of working medium; and

a forced-flow intermediate circuit having a liquid heat vehicle flowing therethrough, said intermediate circuit having a tube with a multiplicity of consecutive passes serially disposed in alternating relation in said exhaust gas duct and said heater to transfer heat from the hot combustion gases to the liquid heat vehicle in said exhaust gas duct and to transfer heat from the liquid heat vehicle to the working medium of said vapor circuit system in said heater, each respective pass extending from one end to an opposite end of said exhaust duct and said heater relative to the flow of hot combustion gases and working medium, each pass being disposed with a net flow direction countercurrent to the respective flows of hot combustion gases and working medium.

4,184,326

LOUVER CONSTRUCTION FOR LINER OF GAS TURBINE ENGINE COMBUSTOR

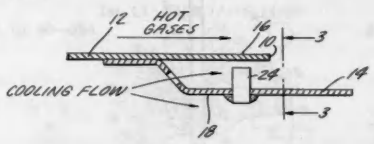
Francis C. Pane, Jr., South Windsor, and Domingo Sepulveda, Cromwell, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 638,012, Dec. 5, 1975, abandoned. This application Aug. 30, 1977, Ser. No. 829,120

Int. Cl.[2] F02C *7/18*

U.S. Cl. 60—39.32 **5 Claims**

1. A louver constructed combustor for a gas turbine power plant that has a hot wall portion and a cooler wall portion, the hot wall portion subjected to gases of combustion, the opposing cool wall portion subjected to cooling air flow including a lip on the downstream end of the louver overlying and spaced from the adjacent downstream louver, cooling air holes in a bent portion of the louver upstream of the lip to flow a film of cool air on the inner wall of the cooler wall portion of the louver, a plurality of laterally spaced posts for limiting the deflection of the lip extending in the cool film between the lip and the adjacent cool wall portion and terminating short of the opposing wall, said posts being disposed within said overlying portion of said lip a sufficient distance from the end thereof and being dimensioned relative to the axial extent of said lip such that its axial dimension is sufficiently small and sufficiently axially spaced from said holes such that the flow egressing



from said holes has sufficient mixing distance to form a substantially circumferentially uniform film of air and the distance said posts is spaced from the discharge end of the lip is sufficiently long to allow the air film flowing therepass to coalesce providing a substantially circumferentially uniform air film, the relationship of said diameter of said posts, the space of said overlying louver and the distance of said posts from its center line to the end of said lip is at substantially a 1:1:1 ratio.

4,184,327

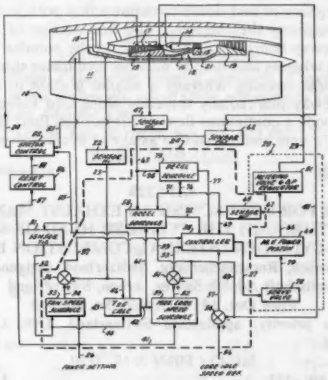
METHOD AND APPARATUS FOR RAPID THRUST INCREASES IN A TURBOFAN ENGINE

Jack E. Cornett, Cincinnati; Ralph C. Corley, Wyoming; Thomas O. Fraley, Middletown, and Andrew A. Saunders, Jr., Cincinnati, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 9, 1977, Ser. No. 858,936

Int. Cl.[2] F02K *3/04*; F02C *9/04, 9/14*

U.S. Cl. 60—240 **26 Claims**



1. In a turbofan engine having a fuel control which operates in response to both sensed fan speed and throttle position, and a compressor stator whose normal angle schedule is controlled by a stator control in response to core speed, an improved stator control comprising:

means for generating a reset signal as a function of throttle position; and

means for modifying said normal stator angle schedule by application of said reset signal to said stator control.

4,184,328

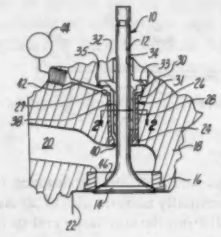
AIR COOLED EXHAUST VALVE

Bernard J. Rezy, Jr., Mobile, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Sep. 8, 1977, Ser. No. 831,384

Int. Cl.² F01N *3/10*

U.S. Cl. 60—305 **4 Claims**



1. A fluid cooled valve construction for an engine, said engine having a housing, said valve construction comprising:

a valve having an elongated stem and an enlarged valve head connected to one end of the stem,

means for axially slidably mounting said stem in said housing,

a source of pressurized fluid,

fluid passage means formed in the housing, said fluid passage means being fluidly connected at one end to said pressurized fluid source and fluidly connected at its other end to an annular opening around said valve stem adjacent said valve head whereby fluid flows through said opening along said valve stem and across one axial end of the valve head to thereby cool said valve,

wherein a portion of said passage means is formed through said mounting means, and

said mounting means further comprises an outer tubular sleeve positioned in a bore in said housing and an inner tubular member positioned within the interior of said sleeve and adapted to slidably receive the valve stem therethrough, wherein at least a portion of the outer periphery of said tubular member is spaced from the inner periphery of said sleeve to define a first portion of a fluid passageway therebetween, said first portion of said passageway being open at one end to the annular opening, and wherein said tubular member terminates short of said annular opening whereby a second portion of said passageway juts radially inwardly along said valve stem to provide a continuous flow of pressurized fluid along said valve stem and across one axial end of the valve head.

4,184,329

DEVICE FOR CONNECTING AN EXHAUST MANIFOLD THROUGH THE CYLINDER HEAD OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Peter Ruesch, Rorschacherberg, Switzerland, assignor to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Oct. 14, 1977, Ser. No. 842,315

Claims priority, application Switzerland, Oct. 14, 1976, 13004/76

Int. Cl.² F01N *7/18, 7/10*

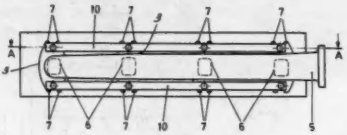
U.S. Cl. 60—322 **11 Claims**

1. A device for connecting an exhaust manifold to cylinder head means of a multi-cylinder internal combustion engine, wherein the cylinder head means includes a plurality of exhaust ports and the exhaust manifold includes a corresponding plurality of pipe sockets, with each of the pipe sockets being placed to communicate with a respective exhaust port, said device comprising:

said exhaust manifold including a plurality of connecting flanges secured to said exhaust manifold and each being at a respective location adjacent to a respective pipe socket; each said flange having at least one pair of lugs defined thereon and said lugs of said pair being spaced apart from one another in the direction of relative thermal expansion and contraction caused motion of said exhaust manifold;

said cylinder head means including connecting surfaces thereon placed such that a respective said exhaust manifold flange is secured thereagainst; each said flange being applied against the respective said connecting surface;

a compression strap over and across each said flange lug pair on the surface of said lug pairs away from the respective said connecting surface; there is at least one said compression strap which extends over and across a respective said lug pair for all said flanges;



fastening means for securing said strap against each said flange and to said cylinder head means and for causing said strap to apply such force to said flange as to seal the connection of the respective said exhaust ports and pipe sockets, while permitting the thermal expansion and contraction caused lateral motion of each said flange with respect to its said connecting surface; said fastening means extending from said pressure strap between said lugs of each said lug pair; the spacing of said lugs of each said pair permitting said lugs and the respective said flange to move with respect to the respective said fastening means passing between said lug pair.

4,184,330

HYDRODYNAMIC REVERSING TRANSMISSION

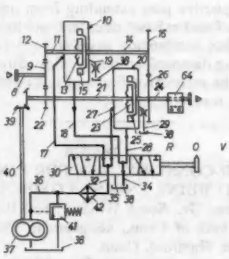
Erich Polzer, Heidenheim, and Hubert Schmölz, Nattheim, both of Fed. Rep. of Germany, assignors to Voith Getriebe KG., Heidenheim, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,212

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 2740991

Int. Cl.² F16D *33/00*

U.S. Cl. 60—335 **20 Claims**



1. A hydrodynamic transmission, comprising rotary input and output members; forward and reverse drive trains connecting said members and respectively comprising first and second fluid flow power devices each adapted to be made selectively effective and ineffective by filling and draining thereof and each having a filling connection and a draining connection; a source of working fluid; and reversing valve means interposed between said source and said connections and adjustable between a first position in which the filling connections of said first and second devices respectively communicate with and are sealed from said source and the draining connections of

said first and second devices are respectively sealed and open, a second position in which the filling connections of said first and second devices are respectively sealed from and communicate with said source and the draining connections of said first and second devices are respectively open and sealed, and a plurality of intermediate positions in which said filling connections communicate with said source and said draining connections are at least partly open.

4,184,331

PUMPING SYSTEM

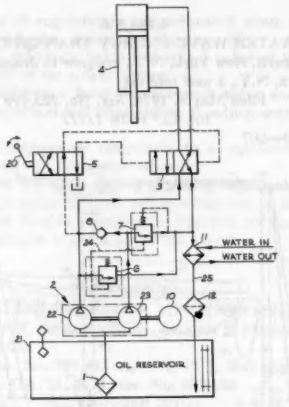
Peter N. Bentley, Caverswall, England, assignor to Thomas Willett & Company Limited, Stoke-on-Trent, England

Filed Feb. 27, 1978, Ser. No. 881,645

Claims priority, application United Kingdom, Apr. 6, 1977, 14652/77

Int. Cl.² F15B *13/09*

U.S. Cl. 60—375 **4 Claims**



1. A pumping system including a pumping unit for handling solids-containing liquids or slurry, said unit having a plunger, a double-acting ram for reciprocating the plunger of the pumping unit to effect a suction stroke and a displacement stroke of the plunger whereby, in use, liquid or slurry is drawn into and discharged from the pumping unit, the ram being controlled automatically through a four-way hydraulic valve which, under the control of a pilot valve, reverses the direction of fluid flow to and from the ram cylinder at each end of the operating stroke, the pressure of the sludge or suspension delivered by the pumping unit being directly related to the pressure of hydraulic fluid in the ram, characterised by first and second hydraulic pumps for delivering fluid to the hydraulic ram, the first hydraulic pump having a high pressure, low volume delivery characteristic and the second one having a low pressure, high volume delivery characteristic, a sump, a pressure relief valve connected to the output of the first pump to by-pass the output thereof to the sump when the relief pressure is attained and a further valve which opens when the pressure in the ram cylinder attains a certain value below the relief pressure of the first pressure relief valve to by-pass the output of the second pump to the sump.

4,184,332

HYDROSTATIC TWO-CIRCUIT STEERING ARRANGEMENT

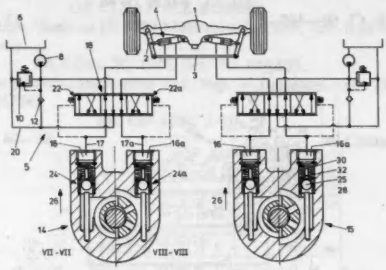
Karl-Heinz Liebert, Schwab. Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 11, 1978, Ser. No. 923,679

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733128

Int. Cl.² F15B *11/16, 13/09*

U.S. Cl. 60—386 **4 Claims**



1. In a fluid steering system for a vehicle having two pressure sources (8), two servomotors (4) acting on steered parts (2) of the vehicle, hand operated and metering pumps (14 and 15) drivable by one operating mechanism (72) and pressure operated control valve means (18) equipped with return springs (22 and 22*a*) for connecting the servomotors with one of the pressure sources, the improvement residing in differential drive means for drivingly connecting the operating mechanism to the hand operated and metering pumps, conduits means (17 and 17*a*) for connecting the pumps to the control valve means, and check valve means responsive to a loss of pressure in one of the conduit means associated with one of the pumps for maintaining operation of the other of the pumps to generate sufficient pressure to operate the control valve means against the bias of the return springs.

4,184,333

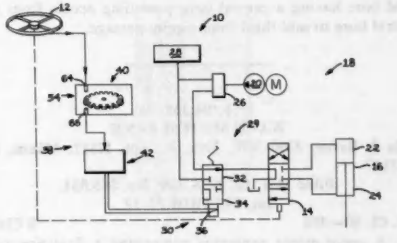
FLUID POWER SYSTEM

James G. Blaha, Painesville; Grant C. Melocik, Chardon, and John E. Wible, Painesville, all of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jun. 30, 1978, Ser. No. 921,015

Int. Cl.² F15B *11/20*

U.S. Cl. 60—420 **10 Claims**



1. A fluid power system (10) comprising:
a valve (14);
a movable steering control device (12) connected to actuate the valve (14); and
means (30) operably connected in the system (10) for supply-

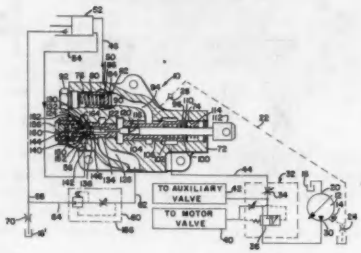
ing pressurized fluid to the valve (14) prior to actuation of the valve (14) in response to a preselected amount of movement of the steering device (12).

4,184,334

CLOSED CENTER DRAFT CONTROL VALVE

Harold R. Orth, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Sep. 11, 1978, Ser. No. 940,813
Int. Cl.² F16H *39/46*
U.S. Cl. 60—445 **13 Claims**



1. A draft control valve for use in a closed center hydraulic system, said draft control valve comprising:

a housing having a plurality of bores and passages including a first longitudinal bore having a plurality of diameters, a second bore having a plurality of diameters and a first valve seat, a first fluid supply passage, a second fluid supply passage, a third fluid supply passage, a first return passage and a second return passage;

a first valve seat in said second fluid supply passage between said second fluid supply passage and said third fluid supply passage;

a valve spool slidably carried in said first longitudinal bore;

a control rod operatively connected to said valve spool;

a valve accommodating insert positioned in said first longitudinal bore having an internal bore and a plurality of access apertures;

a main poppet carried in said internal bore of said valve accommodating insert;

a pilot valve carried in said internal bore of said valve accommodating insert spring loaded to close one of said access apertures;

a push rod affixed to an inboard end of said control rod;

an anti-leakdown check valve carried in said second longitudinal bore having a central bore providing access from said central bore to said third fluid supply passage.

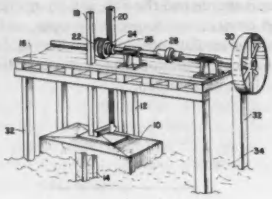
4,184,335

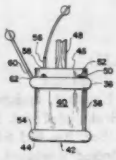
WAVE MOTOR TANK

Irvin J. Byrne, 3200 NW. 79th St., Apt. H811, Miami, Fla. 33147

Filed Mar. 13, 1978, Ser. No. 885,531
Int. Cl.² F03B *13/12*
U.S. Cl. 60—496 **8 Claims**

1. A wave motor apparatus comprising a floatation tank, means to couple the elevation of said tank to an energy gathering apparatus responsive to said elevation of said tank, the improvement comprising a hollow tank having an open mouth portion disposed only at one end thereof, the other end of said tank being closed, said means to couple being affixed to said other end of said tank, means to induce a negative pressure within the interior of said tank when said open mouth portion thereof is disposed below the surface of a body of water, means





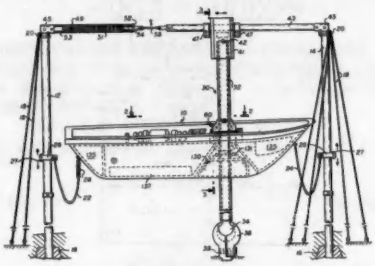
to provide a buoyant force to said tank when said tank is disposed residing in said body of water.

4,184,336

WATER WAVE ENERGY TRANSDUCER

John Lamberti, New York, N.Y., assignor to Joseph Benedetto, Brooklyn, N.Y., a part interest

Filed May 8, 1978, Ser. No. 903,499
Int. Cl.² F03B *13/12*
U.S. Cl. 60—507 **14 Claims**



1. A water wave energy transducer for converting the motion of a water wave to rotational energy, said transducer comprising:

a float having an opening therethrough extending from a lower to an upper end of said float;

a rack bar extending through said float opening, said rack bar having rack teeth;

means for securing one end of said rack bar to a fixed pivot axis for pivotal movement with respect to a water body in which said float is positioned;

a swing block on said float through which said rack bar extends;

a power gear in said swing block meshing with said rack teeth;

a power shaft extending from said power gear;

a drive gear on said power shaft;

a transmission on said float;

a transmission input gear coupled to said drive gear;

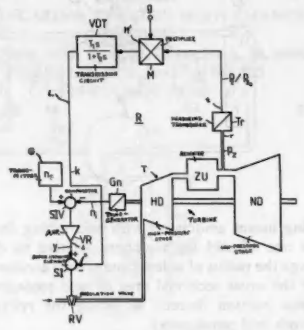
a transmission output shaft; and

clutch means between said drive gear and said transmission output shaft, permitting transmission of rotational energy to said output shaft in only one direction.

4,184,337
METHOD AND APPARATUS FOR REGULATING A RESUPERHEATED STEAM TURBINE

Heinz Bloch, Nussbaumen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jun. 5, 1978, Ser. No. 912,311
Claims priority, application Switzerland, Jun. 29, 1977, 7960/77
Int. Cl.² F01K 13/02
U.S. Cl. 60—660 8 Claims

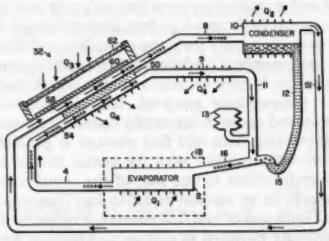


1. A method of regulating a resuperheated steam turbine, having a resuperheater, comprising the steps of:
comparing a reference value and actual value of the rotational speed of the steam turbine;
deriving a difference from the reference value and actual value comparison and constituting an adjustment magnitude;
feeding said adjustment magnitude to a regulation valve arrangement of a regulation circuit;
deriving from the resuperheater pressure a feedback magnitude which yields towards null as a function of time; and
coupling said feedback magnitude opposite to the adjustment magnitude into the regulation circuit.

4,184,338
HEAT ENERGIZED VAPOR ADSORBENT PUMP

Charles E. Bennett, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 789,482, Apr. 21, 1977. This application Oct. 16, 1978, Ser. No. 952,186
Int. Cl.² F25B 27/00
U.S. Cl. 62—2 8 Claims

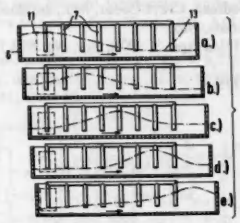


1. In a refrigeration apparatus having an evaporator for absorbing heat, a condenser for rejecting heat, a refrigerant and a pump, the improvement in the pump comprising:
microporous means having at least two working surfaces, said microporous means for adsorbing a vapor from a lower vapor pressure environment on a first of said at least two working surfaces and for desorbing the vapor to a higher vapor pressure environment from a second of said at least two working surfaces, said second surface being in heat energy communication with a heat source to provide a higher temperature at said second surface with respect to said first surface, said microporous means having pore sizes in the range of from 10^{-6} to 10^{-7} centimeters for providing high adsorption and surface diffusion characteristics.

4,184,339
PROCESS AND APPARATUS FOR THE MANUFACTURE OF CLEAR ICE BODIES

Theo Wessa, Siedlung 19, 6751 Mackenbach, Pfalz, Fed. Rep. of Germany

Filed Oct. 20, 1977, Ser. No. 843,857
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647541
Int. Cl.² F25C 1/20
U.S. Cl. 62—68 10 Claims

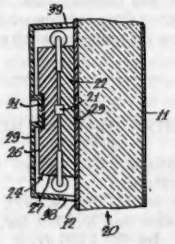


1. A process for the manufacture of clear ice bodies of the type wherein freezing fingers are dipped in a tank which is opened at the top and contains water and the water is caused to flow around the fingers to remove air and salts precipitated as a result of the freezing from the ice surface on the fingers, the improvement comprising producing the flow of water by a controlled rhythmic rise and fall movement of the water level in the form of continuous water waves.

4,184,340
TEMPERATURE SENSOR MOUNTING MEANS

James P. Laughlin, Evansville, Ind., and Gerald A. Eisenbrandt, Stevensville, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 3, 1977, Ser. No. 848,242
Int. Cl.² G01K 13/00
U.S. Cl. 62—129 18 Claims



1. In a refrigeration apparatus having an insulated cabinet provided with an inner liner, refrigeration means for refrigerating the air within said cabinet, and alarm means for indicating an undesirable operating temperature within said cabinet, improved sensing means for controlling operation of said alarm means comprising:

temperature sensing means electrically connected to said alarm means;

encapsulation means encasing said temperature sensing means and effecting a predetermined time delay in the thermal response of said sensing means; and

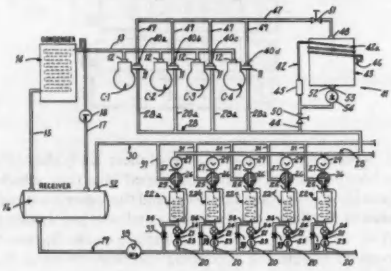
mounting means for mounting said encased temperature sensing means to dispose said sensing means in a first heat transfer relationship with said liner at a location whereat the liner temperature represents substantially an average of the temperature conditions within said cabinet, and in a second heat transfer relationship with said refrigerated air within said cabinet, said encapsulating means and mounting means being cooperatively associated to cause said first heat transfer relationship to provide greater heat transfer to said temperature sensing means than said second heat transfer relationship and effecting a second time delay in the thermal response of said sensing means.

4,184,341

SUCTION PRESSURE CONTROL SYSTEM

Donald E. Friedman, Creve Coeur, Mo., assignor to Pet Incorporated, St. Louis, Mo.

Filed Apr. 3, 1978, Ser. No. 892,777
Int. Cl.² F25B 7/00
U.S. Cl. 62—175 **11 Claims**



1. In a multiple compressor refrigeration system in which the compressors are connected in parallel to draw refrigerant vapor from a common suction source; the improvement comprising pressure responsive switch means having preselected high and low pressure settings for starting and stopping the compressors in a predetermined sequential order for maintaining the suction pressure on the system within a predetermined range, and time delay means connecting the pressure switch means to the suction source comprising restrictor means for restricting refrigerant flow and delaying concomitant vapor pressure communication from the suction source to the pressure switch means, and one-way flow means for providing unrestricted refrigerant flow and concomitant vapor pressure communication from the pressure switch means to the suction source.

4,184,342

VARIABLE RESTRICTOR FOR A REFRIGERATION SYSTEM

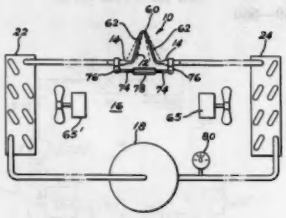
Walter J. Pohl, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Division of Ser. No. 848,538, Nov. 4, 1977, Pat. No. 4,150,558. This application Apr. 20, 1979, Ser. No. 31,794
Int. Cl.² F25B 41/06
U.S. Cl. 62—511 **1 Claim**

1. In a refrigeration system having a compressor, a condenser, and an evaporator connected by tubing in a series refrigeration circuit including a restrictor arranged intermediate said condenser to said evaporator for controlling refrigerant flow therebetween, said restrictor comprising:

a portion of tubing having a flattened segment formed with opposing wall surfaces spaced to provide a passageway having an elongated cross section defined by a plane perpendicular to the axis of said passageway;

said flattened segment being bent to provide an intermediate arcuate portion having diverging leg members extending therefrom, the other ends of each of said leg members being connected to said tubing through first and second arcuate portions;



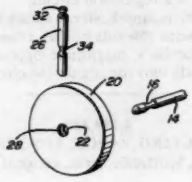
adjusting means associated with said tubing for moving at least one of said leg members relative to the other to change the radius of at least one of said arcuate portions to alter the cross sectional area of said passageway in said arcuate portion thereby adjusting the refrigerant flow through said passageway.

4,184,343

SAFETY CLUTCH FOR EARRING

James W. Green, P.O Box 208, Roxboro, N.C. 27573

Filed Dec. 29, 1977, Ser. No. 865,506
Int. Cl.² A44C 7/00
U.S. Cl. 63—12 **5 Claims**



1. A jewelry clutch including first and second members to be releasably anchored relative to each other, one of said members including a cylindrical anchor post projecting outwardly therefrom and including an outer free end, said post including a continuous circumferential anchor groove formed therein a spaced distance inwardly from the outer free end thereof, the other of said members defining a first endwise outwardly opening passage formed therein and into which said post is removably telescopingly received, said other member also defining a second endwise outwardly opening passage formed therein intersecting with said first passage at generally right angles relative thereto and with the center axis of said first passage laterally offset to one side of the center axis of said second passage in an amount equal to less than one-half the transverse dimension of said first passage, a cylindrical locking post reciporcally mounted in said second passage for lengthwise shifting between first and second positions, in each of which positions said locking post is registered with said first passage, means yielding biasing said locking post toward said first position, said locking post having a continuous circumferential release groove formed therein, said release groove, when said locking post is in said first position, being positioned out of registry with said first passage and when said locking post is in said second position being positioned in registry with said first passage, said anchor post being positionable in said first pas-

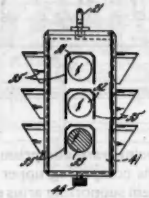
sage with said anchor groove registered with said second passage for receiving said locking post, spaced from said release groove, in said anchor groove to lock said anchor post against lengthwise shifting in said first passage, and said release groove, when said locking post is shifted to said second position, being registered with said first passage to provide clearance for said anchor post to be shifted longitudinally of and withdrawn from said first passage.

4,184,344

MOOD-INDICATING JEWELRY WITH CHANGEABLE DISPLAY

David E. J. Pepin, P.O. Box 354, Grant Park, Ill. 60904

Filed Oct. 4, 1978, Ser. No. 948,505
Int. Cl.[2] A44C *25/00*
U.S. Cl. 63—31 7 Claims



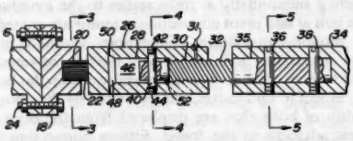
2. A piece of jewelry for indicating mood capable of being used as a pendant or the like which comprises, in combination, a hollow rectangular housing in the shape of a traffic light having at least one set of three vertically spaced apertures of substantially the same size arranged in alignment with one another and having an inner surface in communication with the apertures, means in said housing for displaying a color simulating a traffic signal through each aperture of said set of apertures, while simultaneously displaying a "lights out" condition through the other two apertures of said set, said means including a carrier having a cylindrical surface fitted snugly inside of the inner surface of the housing, the carrier comprising three vertically stacked sections colored red, amber, and green relatively shiftable with respect to the housing and indexibly arranged for selective individual viewing through the top, middle and bottom apertures, the carrier having operating means coupled thereto and extending through and beyond the housing for convenient fingertip manipulation of the carrier to a color condition selected in accordance with the mood of the wearer.

4,184,345

COUPLING FOR DISCONNECTING A MOTOR DRIVE AND DRIVEN ACCESSORY

Jerome J. Cutler, Richboro, Pa., assignor to Ernest J. Sims, Jr.; Nathan M. Goodman, custodian for Michelle B. and Michael W. Goodman; Milton Tottle; Howard Rosenbloom and Robert Mooney

Filed Aug. 17, 1978, Ser. No. 934,432
Int. Cl.[2] F16D *3/56*
U.S. Cl. 64—28 R 10 Claims



1. A coupling between driving and driven members comprising:

(a) a first shaft having a threaded portion,

(b) a sleeve having a blind bore at one end thereof, said bore having threads mating with threads on said first shaft, the length of said first shaft disposed within said bore being less than the length of said bore so as to provide an open chamber at the other end of said bore,

(c) frangible connecting means for fixedly connecting said sleeve and said first shaft,

(d) a splined shaft coaxial with and connected to the other end of said sleeve,

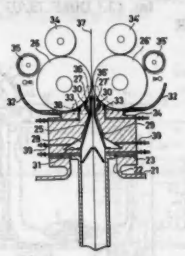
(e) a second shaft having means defining a splined bore receiving a portion of said splined shaft, the length of said portion of said splined shaft within said splined bore being less than the axial length of said chamber whereby said splined shaft can be completely disconnected from said second shaft when the first shaft is stationary, said connecting means fractures and said sleeve rotates relative to said first shaft.

4,184,346

SEAL DEVICE FOR HIGH PRESSURE STEAMER

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Jun. 27, 1978, Ser. No. 919,718
Claims priority, application Japan, Jul. 4, 1977, 52-79684; Jul. 21, 1977, 52-87541; Dec. 19, 1977, 52-152533
Int. Cl.[2] D06B *23/18*
U.S. Cl. 68—5 E 1 Claim



1. A seal device for a high pressure steamer including a steamer drum body having an opening into the interior thereof, a seal block mounted on said steamer drum body at the opening with the seal block forming a hole communicating with the opening and providing a port forming a passageway for moving a cloth material between the exterior and the interior of said steam drum body, said steamer being arranged for hydrothermic treatment of textile products, a pair of rubber seal rolls mounted on said seal block exteriorly of said steamer drum body and disposed in pressed contact with one another forming a seal across the port through said seal block, flexible elastic seal plates located within said port and attached to said seal block, said seal plates extending in parallel relation with the axis of said seal rolls and the inner surfaces of each of said seal plates facing toward the other on the opposite side of the passageway formed through said port for the cloth material so that the cloth material passes between the inner surfaces of said seal plates, the outer surfaces of each said seal plate disposed in contact with a different one of said seal rolls inwardly of the location of pressed contact of said seal rolls, wall means secured within said port through said seal block and forming a duct for the passage of the cloth material, said duct having a first end located inwardly of and closely adjacent to said seal rolls and a second end adjacent the opening into said steamer drum body, said duct spaced inwardly from the surface of said port through said seal block and also inwardly of said seal plates forming an air chamber space between said seal block and said duct which space is closed adjacent to the opening to said steamer drum body and is open between said seal plate and said duct adjacent the location of pressed contact of said seal

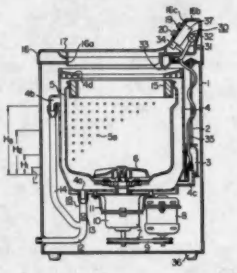
rolls, means for supplying air into said air chamber space at a location spaced from said seal rolls and at a pressure higher than the internal pressure within said steam drum body so that the pressurized air is directed between the location of pressed contact of said seal rolls and the contacting locations of said seal plates and said seal rolls, wherein the improvement comprises a pair of correction air jet pipes each located on the end of said duct adjacent the pressed contact location of said seal rolls and each disposed on an opposite side of the opening into said duct so that each said jet pipe blows air towards a different surface of the cloth material passing between the seal rolls and the adjacent end of said duct for correcting the position of the cloth and for preventing the cloth from being wound onto the surface of said seal rolls.

4,184,347

AUTOMATIC WASHING MACHINE

Hideyuki Tobita, Hitachi, and Toshio Mori, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 17, 1979, Ser. No. 4,225
Claims priority, application Japan, Jan. 25, 1978, 53-6153
Int. Cl.[2] D06F *33/02*
U.S. Cl. 68—12 R **3 Claims**



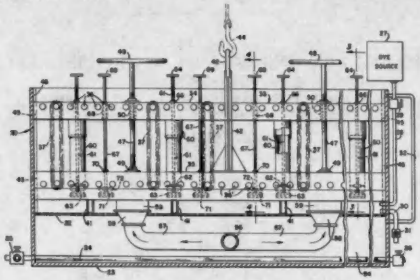
1. An automatic washing machine, comprising an outer housing, an outer tub supported in said housing, a spinning and washing tub rotatably supported in said outer tub, a rotatable wing member for agitating water contained in said spinning and washing tub, drive means for actuating said rotatable wing member at washing and rinsing processes and for rotating said spinning and washing tub at spinning process, a water supply system for supplying water to said outer tub, a water drain system for draining water from said outer tub, storage means for programming and storing operating time durations and operating sequence of said drive means, said water supply system and said water drain system or combinations thereof, means for selecting a desired program from those stored in said storage means, control means for controlling operations of said drive means, said water supply system and said water drain system in accordance with said selected program thereby to effect the washing, rinsing and spinning processes, and means for measuring a filling time required for filling said outer tub with water to a predetermined level at the start of said washing process and arithmetically determining a water feeding time duration for said rinsing process on the basis of said measured filling time, wherein said water feeding time duration at said rinsing process is determined on the basis of a preset rinsing time duration stored in said storage means when said measured filling time is abnormally short.

4,184,348

APPARATUS FOR RANDOMLY COLORING TEXTILE YARNS IN A BATCH SYSTEM

J. B. Cleveland, P.O. Box 875, Calhoun, Ga. 30701

Division of Ser. No. 846,988, Oct. 31, 1977. This application May 22, 1978, Ser. No. 908,132
Int. Cl.[2] D06B *5/18*
U.S. Cl. 68—188 **10 Claims**



1. Apparatus for dyeing yarn comprising an open vat, yarn skein supporting means comprising upper and lower headers, each header having skein supporting arms extending therefrom in cantilevered relation thereto, valved plenum means including telescoping plenum tubes extending between said upper and lower headers and coupling said headers for selective circulation of a dye bath through one or both of said headers, said upper header being movably supported relative to the lower header to allow for variation in the spacing between the skein supporting arms of the upper and lower headers, selectively operable dye bath flow control valves in the plenum means for regulating the admission of the dye bath to both of said headers simultaneously or to one header only, said flow control valves comprising two independent sets of valves in the plenum means, one set regulating the flow of the dye bath to the upper header through said telescoping plenum tubes and the other set of valves regulating the flow of the dye bath from the plenum means into the lower header, and pump and conduit means connected to an inlet of said plenum means and to the vat to effect circulation of the dye bath.

4,184,349

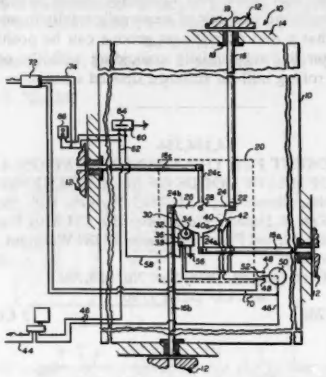
DOOR WITH MAGNETICALLY CONTROLLED LOCK

Nathan Zaks, 540-4 Main St., Roosevelt Island, N.Y. 10044

Filed Mar. 1, 1978, Ser. No. 882,092
Int. Cl.[2] E05B *63/14*
U.S. Cl. 70—118 **7 Claims**

1. Door bolting mechanism including a door that swings from open position into a closed position where the top, bottom, and sides of the door fit into a frame to close the door, the frame having a socket for receiving a locking bolt, characterized by the door having a hollow portion, a hub within the hollow portion, bearings by which the hub is supported in said hollow portion for rotation about an axis extending substantially normal to a front surface of the door, a bolt connected with the hub by a pivot connection with a radius of the hub extending substantially at right angles to the longitudinal axis of the bolt at said pivot connection, a motor associated with the hub, motion-transmitting connections through which the motor rotates the hub, and a key device for operating the motor to turn the hub in a direction to move the bolt axially with respect to said socket, characterized by the door having a plurality of bolts that are displaced from the door and into sockets adjacent to the frame, fittings connecting the inner ends of the bolts with the hub at locations where the direction of the longitudinal axes of the bolts extend substantially tangent to an arc of movement of the connection of the fitting to the hub, characterized by the hub having a separate arm for each bolt, a circumferential section on the hub between the

angular positions of successive arms and with gear teeth thereon, a gear driven by the motor and meshing with the teeth on said circumferential section, and further characterized by the circumferential section on the hub and the gear being located near the end of one of the arms of the hub, the gear



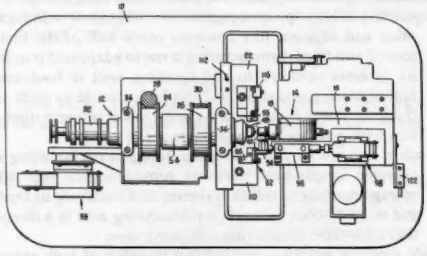
having a circumference large enough to operate the bolts with less than one turn of the gear, and a cut-out portion of the circumference of the gear in position to provide clearance for the adjacent arm for a hub position corresponding to one limit of the movement of the hub.

4,184,350

HIGH-PRODUCTION METHOD AND APPARATUS FOR MAKING SPIRAL CONVOLUTION ELECTRICAL HEATING COILS

Laurence G. Horwitt, New Haven, Conn., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Jun. 26, 1978, Ser. No. 919,397
Int. Cl.[2] B21C *47/06*
U.S. Cl. 72—132 **32 Claims**



1. A high-production apparatus for making a spiral heating coil, comprising in combination:

(a) a machine frame,

(b) an arbor having a slit, rotatably mounted on the machine frame,

(c) a holder slidably mounted on the machine frame and movable between an advanced position toward the arbor and a retracted position away from the arbor,

(d) said holder having means providing an opening with relieved mouth portions adapted to receive for insertion therein an end portion of a ribbon of resistance wire stock,

(e) means on said holder for frictionally seizing the inserted ribbon in a position on the holder wherein an end of the ribbon is directed at the arbor slit for insertion therein as the holder is advanced toward the arbor,

(f) means carried by said machine frame, providing a stop for engagement with said end of the ribbon when the latter is inserted fully in the holder,

(g) means mounting said stop on the machine frame for movement between an advanced position for engagement with the ribbon end and a retracted position where it is withdrawn from the ribbon end,

(h) means operative to shift the stop to the retracted position with a fast snap movement prior to advancing movement of the holder,

(i) means for rotatably driving the arbor, to effect a spiral coiling of the ribbon after said end has been inserted in the slit of the arbor, and

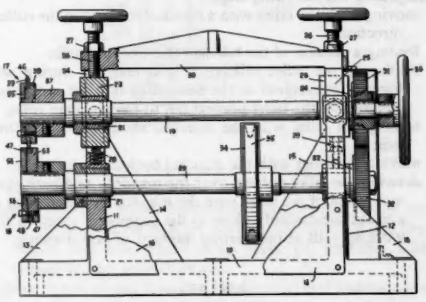
(j) means on the machine frame, for applying a yielding restraint to the ribbon as it is being coiled on the arbor.

4,184,351

HIGH-PRODUCTION METHOD AND APPARATUS FOR MAKING GROOVED RESISTANCE RIBBON FOR ELECTRICAL HEATING COILS

Laurence G. Horwitt, New Haven, Conn., assignor to Sun Chemical Corporation, New York, N.Y.

Filed May 22, 1978, Ser. No. 908,098
Int. Cl.[2] B21D *17/04*
U.S. Cl. 72—132 **18 Claims**



1. High-production apparatus for processing flat, resistance-wire ribbon stock in preparation for making the same into a spiral heating coil, comprising in combination:

(a) a pair of cooperable male and female die rolls,

(b) one of said die rolls having a circumferentially extending peripheral portion characterized by a wedge-shaped cross-sectional configuration,

(c) the other of said die rolls having a circumferentially-extending peripheral portion provided with an annular circumferential groove adapted to receive the peripheral portion of the first die roll,

(d) means on said other die roll, providing guides in said annular groove for engagement with the resistance-wire ribbon stock,

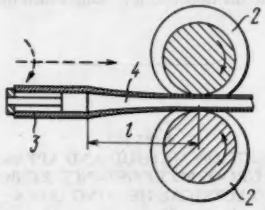
(e) said guide means positioning the ribbon to enable the peripheral portions of said first die roll to engage one side of the ribbon along a longitudinal area spaced inwardly from the longitudinal side edges of the ribbon,

(f) said other die roll having an annular clearance space in the groove thereof, located between said guide means and nearer to the center of the die roll, for providing clearance at a side opposite said one side of the resistance-wire ribbon to enable central portions of the ribbon to be forced into said clearance space by force imparted thereto by the peripheral portion of the first die roll.

4,184,352
METHOD FOR PILGER ROLLING OF TUBES AND MILL FOR EFFECTING SAME

Ivan N. Potapov; Petr I. Polukhin; Ivan P. Gremyakov, all of Moscow; Mikhail A. Bitny, Alma-Ata; Anatoly G. Vinogradov, Pervouralsk Sverdlovskoi; German D. Styrkin, Noginsk, Moskovskoi; Gennady V. Filimonov, Moscow; Vladimir M. Kolesov, Alma-Ata; Igor M. Raushenbakh, Alma-Ata; Vasily P. Pedas, Alma-Ata; Alexandr V. Ukhov, Alma-Ata, and Petr A. Rodionov, Alma-Ata, all of U.S.S.R., assignors to Moskovsky Institut Stali i Splavov, Moscow, U.S.S.R.

Filed Jun. 8, 1978, Ser. No. 913,810
Int. Cl.[2] B21B *21/00*
U.S. Cl. 72—208 3 Claims



1. A method for pilger rolling of tubes in a stationary roll mill stand with continuously rotating working rolls forming a pass, the working section of which is curvilinear in profile, comprising the following steps:

moving a tubular billet with a mandrel forward in the rolling direction;

feeding a portion of the billet to the working rolls;

displacing the billet relative to the mandrel during said forward movement in the same direction for a distance covered by the billet portion fed to the working rolls;

turning the billet with the mandrel about its longitudinal axis;

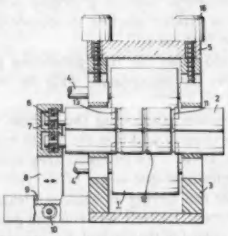
moving the billet with the mandrel backward; and

drawing the billet portion over the mandrel, said backward movement of the billet with the mandrel being effected at a speed substantially close to the peripheral speed of the working rolls at the starting moment of said drawing.

4,184,353
ROLLING MILL

Carl Sebardt, Stjärnhov, and Bengt Orrling, Luleå, both of Sweden, assignors to Stiftelsen For Metallurgisk Forskning, Luleå, Sweden

Filed Apr. 24, 1978, Ser. No. 899,474
Claims priority, application Sweden, Apr. 28, 1977, 7704883; Dec. 1, 1977, 7713666
Int. Cl.[2] B21B *31/18*
U.S. Cl. 72—221 8 Claims

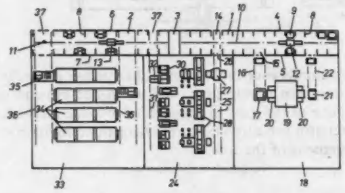


1. A rolling mill comprising: a roll stand; a pair of cylindrical work rolls; said work rolls having roll-pass grooves associated in pairs, with different roll-pass areas; means for mounting said work rolls on said roll stand; back-up rolls mounted in said roll stand; driving means for driving said work rolls, said driving means comprising means for rotating said back-up rolls and means for urging said back-up rolls into hard mutual contact with said work rolls such that the work rolls rotate with the back-up rolls; said work roll mounting means comprising means for displacing said pair of work rolls axially in said roll stand such that a desired roll-pass groove can be positioned with its center line substantially coinciding with the central plane of the rolling mill for rolling a desired section.

4,184,354
ARRANGEMENT FOR THE TRANSPORTATION AND STORAGE OF HEAVY GOODS OF BULKY DIMENSIONS

Helmut Eberlin, Blumenweg 1, D-7889 Wyhlen, Fed. Rep. of Germany; Karl R. Halada, Fichtenweg 752, CH-5102 Rupperswil, Switzerland, and Peter Kaufmann, D-789 Waldshut, Fed. Rep. of Germany

Filed Oct. 30, 1978, Ser. No. 955,750
Int. Cl.[2] B21B *1/00*
U.S. Cl. 72—250 5 Claims



1. A high space storage system for the transportation and storage of heavy manufactured goods of bulky dimensions particularly adapted for facilitating a production line for the manufacture and intermediate storage of bulky flat or rolled metal articles which are rolled in one manufacturing rolling mill area, cut by cutting machinery in an adjoining second manufacturing area and heat treated and annealed in a third manufacturing area adjacent said second area comprising:

a plurality of high space storage areas in alignment with each other and adjacent to a common outer wall of the first, second and third manufacturing areas to adapt said plurality of areas confined to said common wall to load and unload stock metal material from high storage to each of the three lower manufacturing areas in a transverse direction from said high space storage areas;

each of said plurality of high space storage areas including a common longitudinal trackway provided with high lift storage machinery which traverses said trackway to load and unload goods for each manufacturing area in a direction transverse to said manufacturing area;

side supports adapting each of said plurality of high space storage areas for the reception of goods in a size for delivery to said manufacturing areas and in a size for reception from the manufacturing areas to a subsequent stage of manufacture or for delivery as a finished product;

separate exit means from said high space storage areas adapting delivery to each of said manufacturing areas of metal goods unloaded from said storage areas; and

a plurality of truck means adapting the removal of said metal goods from each manufacturing area, including trucks moving goods underground in a transverse direction from said high storage areas to the rolling mill for rolling operations, trucks moving overhead from said high storage areas to the cutting machinery in the second manufacturing area and trucks moving overhead in a transverse direction to deliver products from said high storage areas to the annealing apparatus in the third manufacturing area.

4,184,355

METHOD AND A PUNCH/DIE ASSEMBLY FOR THE PRODUCTION OF HEAT EXCHANGER FINS

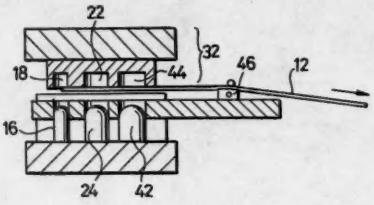
Toyoo Kozima, Ohmorihigashi, Japan, assignor to Hidaka Engineering Co., Ltd., Tokyo, Japan

Division of Ser. No. 777,326, Mar. 14, 1977, Pat. No. 4,109,501, which is a continuation-in-part of Ser. No. 604,306, Aug. 13, 1975, Pat. No. 4,055,067. This application Mar. 16, 1978, Ser. No. 887,421

Claims priority, application Japan, Sep. 11, 1974, 49/103808

Int. Cl.[2] B21D *31/02*

U.S. Cl. 72—327 4 Claims



1. A punch and die assembly for use in the formation of flanged apertures in heat-exchange fins made from a sheet metal workpiece, said assembly comprising:

a lower tool holder supporting on the upper surface thereof a plurality of sets of first and second punches with said punches in said set being at a predetermined distance from each other,

an upper tool holder mounting on the lower surface thereof a plurality of sets of first and second dies in conformity with said first and second punches, respectively, one of said tool holders being movable towards and away from said other tool holder, said first dies and said first punches having a diameter smaller than the diameter of said second dies and said second punches, said first dies and said first punches being adapted to perforate a plurality of small apertures at predetermined positions on a single workpieces, and

means for moving the workpiece first past said first dies and said first punches and then past said second dies and said second punches.

4,184,356

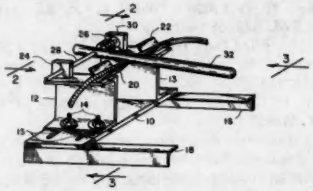
TOOL FOR STRAIGHTENING PLUMBER'S SNAKES

Steven L. Wittmer, 35564 Purcell Pl., Fremont, Calif. 94536

Filed Dec. 6, 1978, Ser. No. 966,795

Int. Cl.[2] B21D *3/00*

U.S. Cl. 72—389 4 Claims



1. A manually operated tool for straightening bends in plumbers' snakes, said tool comprising:

a pair of spaced coplanar V-section members for receiving a plumber's snake;

a straightening bar, the first end of said bar being pivotally mounted on a shaft behind said V-section members and parallel thereto, the second end of said bar providing a handle forward of said V-section members for manually urging said bar downward between said V-section members;

adjusting means for varying the spacing between said coplanar V-section members; and

centering means for maintaining said straightening bar midway between said V-section members irrespective of their spacing.

4,184,357

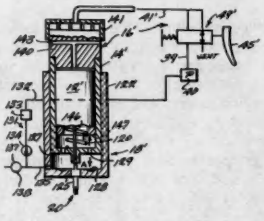
FASTENING WITH TWO-PIECE FASTENERS

James H. Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Filed Jan. 31, 1978, Ser. No. 873,969

Int. Cl.[2] B21J *15/34*

U.S. Cl. 72—391 20 Claims



1. A powered impacting device comprising

a massive first, inner, piston;

a second, outer, piston, concentric with said first piston and forming a cylinder wall for guiding movement of said first piston, said first piston being relatively movable with respect to said second piston;

means for supplying actuating fluid so that said pistons move in a given axial direction;

biasing means between said first and second pistons exerting a force in a direction opposite said given axial direction for biasing said first piston to a particular relative position with respect to said second piston;

means for receipt of a self-piercing two-piece fastener, having concentric inner and outer components, in operative relationship with said pistons so that said outer component is driven by said second piston to pierce a workpiece, and said inner component is driven by said first piston to effect locking of said outer component with said workpiece, said means comprising a cylinder for guiding movement of said second piston in the axial direction; said cylinder having an end face for operatively stopping axial movement of said second piston;

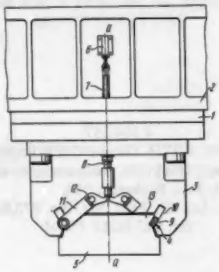
means for venting gas from between said first and second pistons upon relative movement between said first and second pistons, and from between said cylinder and said second piston upon relative movement therebetween; and

said first piston being massive enough so that upon termination of movement of said second piston under the influence of the actuating fluid said first piston will continue movement in said axial given direction against the bias of said biasing means with sufficient force to drive said inner component into desired final operative position with respect to said outer component.

4,184,358
DEVICE FOR MOUNTING A TOOL ON THE MOVABLE CROSSBEAM OF A PRESS

Sergei N. Gorlitsin, prospekt Ordzhonikidze, 10, kv. 80; Vladimir I. Koires, ulitsa Bakinskikh komissarov, 58, kv. 83, and Alexandr I. Sokolov, prospekt Kosmonavtov, 29b, kv. 37, all of Sverdlovsk, U.S.S.R.

Filed Apr. 27, 1978, Ser. No. 900,514
Int. Cl.[2] B21J *13/02*
U.S. Cl. 72—462 2 Claims

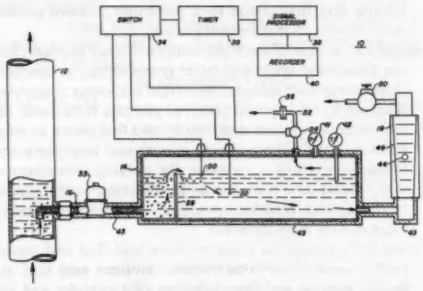


1. A device for mounting a tool on the movable crossbeam of a press, comprising: a tool holder having an axis of symmetry and being fastened on the crossbeam of the press; tool grippers arranged to both sides of said axis of symmetry, mounted for relative motion toward and away from the tool; power cylinders mounted on said crossbeam and having rods and being adapted to effect said relative motion of said grippers, wherein each said gripper includes a block accommodated in a groove provided in said tool holder, a face of each block carrying thereon a bell crank of which a free arm is adapted to cooperate with the respective rod of said power cylinders, whereby the tool can be fastened on the crossbeam of the press.

4,184,359
GAS MONITOR FOR LIQUID FLOW LINE

Charles M. Gracey, Carmichael, Calif., assignor to Aerojet-General Corporation, La Jolla, Calif.

Filed Aug. 30, 1978, Ser. No. 937,918
Int. Cl.[2] G01N *7/14*
U.S. Cl. 73—19 3 Claims



1. A meter for identifying the concentration of gas in a liquid flow comprising:

a gas/liquid separating chamber having an inlet for receiving a liquid and any gas carried by that liquid, a gas outlet, and a liquid outlet;

a control valve for blocking flow through said gas outlet so that separated gas will collect and depress the level of liquid in said separating chamber;

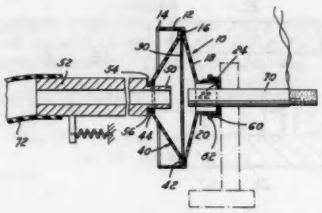
means for measuring liquid flow out of said chamber; and

means for measuring separated gas by monitoring the liquid level in said separating chamber.

4,184,360
FILTER HOLDER FOR CIGARETTE RESEARCH TESTING

Attila Vadnay, and Charles E. von Reis, both of Ann Arbor, Mich., assignors to Gelman Sciences, Inc., Ann Arbor, Mich.

Filed Jun. 30, 1978, Ser. No. 920,959
Int. Cl.[2] A24F *47/00;* G01N *1/24*
U.S. Cl. 73—28 2 Claims



1. A disposable filter holder for tar and nicotine testing of cigarettes which comprises:

(a) a main body formed of relatively thin sheet plastic material having a wide, cylindrical portion open at one end and a closure wall at the other end having a tapered wall angling away from the cylindrical portion and means terminating in a relatively small opening for retaining a test cigarette, said main body being adapted to receive a filter disc, and

(b) a closure cone formed of thin sheet plastic material having a central opening for a biased connection of a suction conduit to a sub-ambient pressure source and terminating in a thin peripheral edge having an outer diameter to be received in a friction fit with said cylindrical portion of said main body and to seat against said closure wall of said main body,

said parts being dimensioned to fit in self-retaining position and to retain and seal a disc filter in said body between the peripheral portions of the closure wall and the closure cone without additional sealing elements when axial pressure is applied to said assembled parts by said conduit.

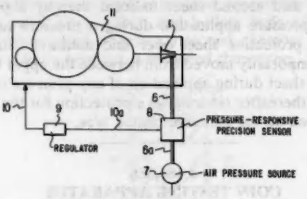
4,184,361
SLIVER DENSITY SENSING APPARATUS

Ludwig Erben, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trutzschler GmbH & Co. KG. Mönchen-Gladbach, Fed. Rep. of Germany

Filed Dec. 16, 1977, Ser. No. 862,825
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657603
Int. Cl.[2] D01G *23/06;* D01H *5/38;* G01N *9/26;* G01B *13/00*
U.S. Cl. 73—37.7 10 Claims

1. An apparatus for sensing the density variation of a sliver, including a sliver funnel through which the sliver passes and which has an intake portion including an outlet opening having a diameter, a discharge portion adjoining the outlet opening of the intake portion and a chamber formed as an enlarged part of the discharge portion; the chamber having an inlet, an outlet and a lateral opening; the chamber being in communication with a source of pressurized air and a pressure sensing device through the lateral opening; the pressure sensing device receiving pneumatic signals as a function of the variation of pressure in the chamber dependent upon the density of the sliver portion momentarily present in the chamber; the improvement wherein said sliver funnel is arranged at an output of a carding

machine for receiving a web discharged thereby and for combining it into a sliver passing through said chamber; said pressure sensing device comprising a pressure-responsive precision sensor including converter means for converting said pneumatic signals into digital signals; said converter means including means for emitting a first digital signal when the pneumatic



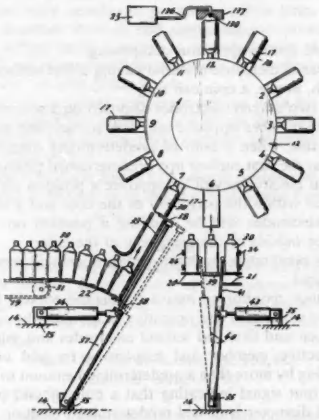
signal exceeds a maximum predetermined value and means for emitting a second digital signal when the pneumatic signal falls below a minimum predetermined value; the value range between said maximum and minimum values representing a predetermined tolerance range of the density variation of the sliver.

4,184,362

BOTTLE LEAK TESTER

Wendell E. Standley, Lake Forest, and Edward M. Naureckas, Libertyville Township, Lake County, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 24, 1978, Ser. No. 927,432
Int. Cl.[2] G01M *3/20*
U.S. Cl. 73—40.7 **29 Claims**



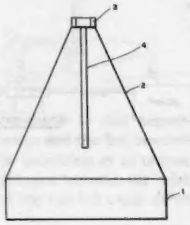
1. An apparatus for testing leaks in a multiplicity of containers at a high rate utilizing a leak detecting gas comprising:
a carrier member;
a frame member to support said carrier member in a rotatable manner on a horizontal axis;
means to rotate said carrier member;
a multiplicity of open-ended pocket members carried by said carrier member and arranged in a plurality of rows;
means to introduce said containers into said pocket members;
means disposed opposite said open ends of said pocket members defining a sealing surface for closing said containers;
means carried by said carrier member to releasably seal said containers against said sealing surface;
means operatively associated with said means to seal said containers to introduce said leak detecting gas into said containers;
detection means carried by said frame member; and
signal means operatively associated with said detection means to activate said means to release said containers from said pocket members.

4,184,363

METHOD OF AND APPARATUS FOR MEASURING THE THICKNESS OF ONE LIQUID OVERLYING ANOTHER

Grigor D. Vassilev; Zdravko A. Yordanov; Lyubomir A. Stoyanov; Rali V. Ralev, and Kosta M. Kostov, all of Varna, Bulgaria, assignors to So "Voden Transport", Varna, Bulgaria

Filed May 12, 1978, Ser. No. 905,548
Int. Cl.[2] G01N *33/18, 33/28*
U.S. Cl. 73—61.1 R **4 Claims**



1. A method of determining the thickness of a first liquid overlying a second liquid in a body of the second liquid, said method comprising the steps of:
lowering an upwardly converging tapered hollow body having a downwardly extending apron at the broad base of the hollow body, into the liquids whereby said apron defines an area at which the measurement is to be taken, until the upper surface of said first liquid reaches the upper end of said body;
sensing the presence of the upper surface of the first liquid when it reaches said upper end;
sensing the location of the interface between said liquids upon the detection of the upper surface of the first liquid reaching said upper end, thereby ascertaining the height of the first liquid in said hollow body; and
converting said height to a measure of the original thickness of the first liquid on the second liquid over said area.

4,184,364

VISCOSIMETER

Hyung Du Bae, Brea, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,756
Int. Cl.[2] G01N *11/02*
U.S. Cl. 73—54 **11 Claims**

1. A viscosimeter comprising:
a closed loop including first and second turbine flowmeters connected in series, a pump to circulate a fluid through said first and second turbine flowmeters, said first and second turbine flowmeters producing pulses at frequencies f_i and f_j, respectively, where the flow rate of fluid through said first and second flowmeters is Q_i and Q_j respectively, where

$$Q_i = m_1 f_i + n_1 v + c_1$$

$$Q_j = m_2 f_j + n_2 v + c_2$$

$$Q_i = Q_j$$

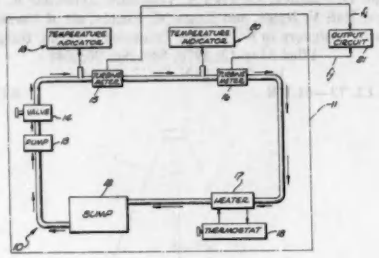
where
m_1, n_1, c_1, m_2, n_2 and c_2 are constants and

v is the viscosity of said fluid;
and computer means connected to receive said pulses from both of said first and second turbine flowmeters for producing an output proportional to viscosity v as defined by

$$v = Af_j - Bf_i + C,$$

where

$$A = m_2/(n_1 - n_2)$$



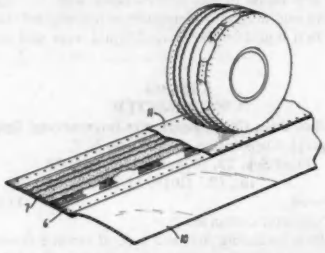
$$B = m_1/(n_1 - n_2)$$

$$C = (c_2 - c_1)/(n_1 - n_2)$$

and

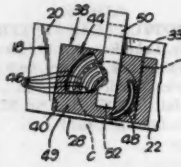
$$n_1 \neq n_2.$$

4,184,365
TIRE INSPECTION AND RECORDING DEVICE
David F. Webster, 1325A Edwards Ave., Santa Rosa, Calif. 95401
Filed Dec. 21, 1978, Ser. No. 971,803
Int. Cl.² B60C *19/10*; G01M *17/02*
U.S. Cl. 73—146 **2 Claims**



1. An inspection and recording device for ascertaining any surface abnormality on a pneumatic tire on a wheel on a dirigible vehicle and any deviation in the alignment of the wheel on which such tire is mounted with respect to the camber and toe-in of such wheel with respect to such vehicle and recording each such abnormality and each such misalignment comprising an upper sheet having a central area thereon defining a test area, marginal areas on either side of said test area, intermediate ink transfer means disposed beneath the test area on the upper sheet, a second sheet having an adhesive coated area thereon positioned below the upper sheet with the adhesive coated area only in the area of said second sheet located beneath said test area, the areas on said second sheet disposed beneath said upper sheet marginal areas being free of adhesive, said adhesive permanently receiving impressions imparted by any pressure applied in the test area on the upper sheet and transferred from the intermediate ink transfer surface, said areas on said second sheet which are free of adhesive not forming any impression of any portion of pressure applied to said upper sheet marginal areas so that only that portion of pressure application which is applied to said test area is recorded on said second sheet to form thereby a permanent record of pressure application during a pressure test, and a removable protective sheet over said adhesive coated area which is temporarily moved from between the upper sheet and the second sheet during application of any pressure to the test area and is thereafter returned as a protection for the information recorded on the adhesive coated area.

4,184,366
COIN TESTING APPARATUS
Frederick R. Butler, 8 Lancaster Ride, Penn, High Wycombe, Buckinghamshire, HP10 8DU, England
Continuation of Ser. No. 804,776, Jun. 8, 1977, abandoned. This application Jun. 26, 1978, Ser. No. 918,805
Claims priority, application United Kingdom, Jun. 8, 1976, 23672/76
Int. Cl.² G07F *3/02*
U.S. Cl. 73—163 **13 Claims**



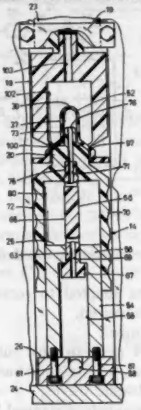
1. A coin testing apparatus comprising:
a member of dielectric material having a first surface against which, in use, a coin can rest;
at least two spaced electrodes disposed on a second surface of said member opposite said first surface and positioned such that when a coin of predetermined diameter rests against the first surface in a predetermined position a first of said electrodes will be opposite a position on the first surface within the periphery of the coin and a second of said electrodes will be opposite a position on the first surface outside of the periphery of the coin;
a planar conductive member arranged on said second surface; and
capacitance monitoring means connected to said first and second electrodes and operative to monitor the capacities between said first and second electrodes and said planar conductive member and responsive to said capacities differing by more than a predetermined amount to provide an output signal indicating that a coin of said predetermined diameter is in said predetermined position.

4,184,367
NIPPLE FLOW RATE TESTER
Hilas L. Jenney, Shiloh, and John Mlay, Jr., Mansfield, both of Ohio, assignors to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 16, 1978, Ser. No. 952,187
Int. Cl.² G01M *3/02*
U.S. Cl. 73—37 **18 Claims**

8. A nipple flow rate testing device for indicating gaseous flow through a flexible nipple having at least one orifice comprising:
a test nozzle member defined by a piston block including a sealed hollow chamber and a passage extending from outside said piston block to said hollow chamber;
means to introduce a gaseous fluid into said chamber;

a plunger member defined by a head portion and an elongated body portion constructed and arranged for reciprocal movement of said head portion in said chamber of said piston block and said elongated body portion through said passage;

a hollow body member slidably positioned over said piston block and defining a nipple receiving head portion with a fluid passage, said plunger member operatively connected with said body member, said hollow body member and said piston block effecting a second chamber when said hollow body member is extended thereover;



first and second fluid passage means operatively associated with said plunger member, said piston block and said hollow body member to permit fluid flow from said hollow chamber through said nipple support portion when said hollow body member is extended from said piston block and to prevent flow when said hollow body member is seated on said piston block;

a flowmeter including a nipple receiving head for positioning the head and an orifice of a nipple therein when supported by said hollow body member and extended from said piston block;

whereby fluid flow through the nipple orifice and indicated by said flowmeter is an indication of nipple flow rate.

4,184,368

OCEANIC WAVE MEASUREMENT SYSTEM

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; John F. Holmes, Bay St. Louis, Miss., and Ronald T. Miles, Slidell, La.

Filed Oct. 16, 1978, Ser. No. 951,423
Int. Cl.² G01C *13/00*
U.S. Cl. 73—170 A **7 Claims**

1. An oceanic wave measurement system comprising:

air inlet means coupled to environmental air for providing an air pressure output corresponding to static air pressure;

a barometer providing an electrical output responsive to said output of said air inlet means;

a floatable base and means for mounting said air inlet means and said barometer on and above said floatable base;

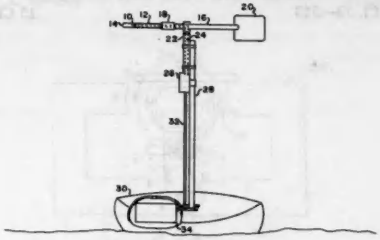
filter means responsive to the output of said barometer for providing an A.C. output signal in the frequency range of 0.05 to 0.2 Hz;

positive peak detection and signal holding means responsive to the output of said filter means for detecting and temporarily storing cyclic positive peak voltages applied to it;

negative peak detection and signal holding means responsive to the output of said filter means for detecting and temporarily storing cyclic negative peak voltages applied to it;

zero crossing detection means responsive to an A.C. signal from said filter means for providing an output each time that a signal crosses a zero signal level;

trigger means responsive to the output of said zero crossing detector for applying an initiation signal, alternately, to said positive and negative peak detectors for resetting said detectors, whereby there continues detected the last occurring positive and negative voltages peaks; and



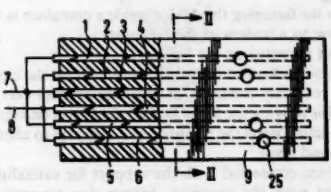
summing means responsive to said negative and positive peak detection means and the last occurring positive and negative peaks for providing as an output a signal representative of the distance between the minimum and maximum excursion of the last full cycle of wave movement.

4,184,369

DEVICE FOR THE CONTINUOUS MEASUREMENT OF THE LIQUID LEVEL IN A CONTAINER

Wilhelm Jung, Giessen-Kleinlinden, and Wolfgang Stark, Kriftel, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 8, 1978, Ser. No. 967,642
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1978, 2803863
Int. Cl.² G01F *23/26*
U.S. Cl. 73—304 C **3 Claims**



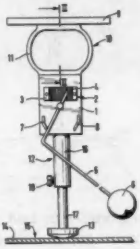
1. In a device for the continuous measurement of the liquid level in a container, comprising capacitive sensive element of the multiwire band line type as the oscillation-determining element of an oscillator in an electric circuit having a high input impedance, said sensing element having a plurality of elongate electrodes severed by piercing the band line to obtain electrodes of different lengths, said electrodes embedded in an insulating material, said electrodes being of different lengths to obtain desired calibration characteristics.

4,184,370

LIQUID LEVEL MEASURING DEVICE

Horst Schlick, Pfingstbrunnenstr. 40, Schwalbach, Fed. Rep. of Germany (6231), and Karl Rau, Blumenstrasse 20, Mühlheim, Fed. Rep. of Germany (6052)

Filed Aug. 31, 1978, Ser. No. 938,479
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740653
Int. Cl.[2] F04B 49/04; G01F 23/10
U.S. Cl. 73—313 15 Claims



1. A liquid level measuring device for use inside containers having different sizes and shapes, comprising:
a holder for fastening the device to the top of a container;
a support mounted on the holder and extending toward the bottom of the container;
an electro-mechanical transducer mounted on the support;
a lever rotatably mounted on the support and carrying a float for moving the lever as the liquid level changes, said lever acting upon the transducer in response to changes in the liquid level;
prop means connected with the support in generally axial alignment therewith for extending into contact with the container bottom for supporting the support relative to the container bottom;
resiliently yieldable coupling means connecting the support to the holder to compensate for dimensional changes between the top and bottom of the container and maintaining the prop in engagement with the container bottom so that the support is maintained in a constant predetermined spaced relation to the container bottom; and
adjustble means for adjusting the length of the device to accommodate it to different size containers.

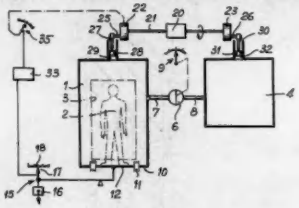
2. In combination, a liquid level measuring device and pump, comprising:
a holder for fastening the device inside a container in spaced relation to a bottom of the container;
a support mounted on the holder;
an electro-mechanical transducer mounted on the support;
a lever rotatably mounted on the support and carrying a float for moving the lever as the liquid level changes, said lever acting upon the transducer in response to changes in the liquid level;
prop means connected with the support for extending into contact with the container bottom for supporting the support relative to the container bottom, said prop means comprising a motor-driven pump means driven by conventional means for pumping liquid from the container; and
resiliently yieldable coupling means connecting the support to the holder so that the support is movable in a longitudinal direction relative to the holder to compensate for dimensional changes between the top and bottom of the container to maintain the support in a constant predetermined spaced relation to the container bottom.

4,184,371

APPARATUS FOR MEASURING THE DENSITY OF A BODY

Roland Brachet, Domaine d'Arnaga, Callian, France (83810)

Filed Oct. 4, 1978, Ser. No. 948,531
Claims priority, application France, Nov. 9, 1977, 77 33770; Jul. 27, 1978, 78 22229
Int. Cl.[2] G01N 9/02, 9/26
U.S. Cl. 73—433 21 Claims



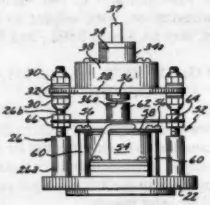
1. An apparatus for measuring the density of a body which comprises:
(a) a main chamber adapted to receive the body whose density is to be measured;
(b) an auxiliary chamber;
(c) a subsonic wave generator for subjecting both of said chambers, in phase, to amplitude variations of pressure so as to generate subsonic waves;
(d) a differential manometer arranged between each of said chambers;
(e) means for equalizing the subsonic pressures of said two chambers;
(f) measurement means driven by said means for equalizing said subsonic pressures; and
(g) weighing means for weighing said body, said weighing means being arranged within said main chamber.

4,184,372

PARTICLE DETECTION SYSTEM AND APPARATUS THEREFOR

Jack M. Brown, Costa Mesa, Calif., assignor to B and W Engineering Services, Costa Mesa, Calif.

Filed Oct. 31, 1977, Ser. No. 847,397
Int. Cl.[2] G01D 21/04; G01M 7/00
U.S. Cl. 73—572 6 Claims



1. A particle detector for determining the presence of a particle in a sealed enclosure comprising in combination,
a platform adapted to mount on a vibrator,
two or more support posts fixed to said platform in spaced relation thereon,
a support member bridging said posts in spaced relation to said platform and adapted to receive an electronic amplifier connected in circuit with readout means,
a transducer on said amplifier having connection therewith and to receive an enclosure,

a spring member bridging said posts between said support member and said platform,

an anvil secured to the underside of said support member and a hammer therefore secured to the topside of said spring member,

and an electromagnetic actuator mounted on said platform and energizable to pull said hammer away from said anvil against the bias of said spring member and deenergizable to release said hammer to enable the bias of said spring member to move said hammer into engagement with said anvil.

4,184,373

APPARATUS FOR EVALUATING A BOND

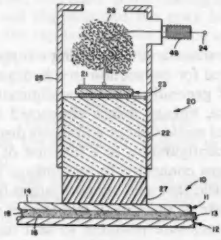
Charles B. Evans, Arlington; John D. Fenton, Fort Worth, and Bonner W. Staff, Grand Prairie, all of Tex., assignors to Vought Corporation, Dallas, Tex.

Continuation of Ser. No. 624,620, Oct. 22, 1975, Pat. No. 4,100,808. This application May 24, 1978, Ser. No. 908,884

The portion of the term of this patent subsequent to Jul. 18, 1995, has been disclaimed.

Int. Cl.[2] G01N *29/00*

U.S. Cl. 73—588 **9 Claims**



1. Apparatus for evaluating a bond between first and second structures bonded together by an intermediate layer of adhesive to form a composite construction, the first structure having a first surface and an oppositely facing, second surface having at least partial contact with the layer of adhesive, the second structure having a surface facing the layer of adhesive and having at least partial contact with the layer of adhesive, the apparatus comprising:

means for transmitting a pulse of ultrasonic wave energy, of a wavelength shorter than the thickness of the first structure and shorter than the thickness of the intermediate adhesive layer the pulse being of a duration at least as short as approximately 1.5 wave cycles, into the first structure and the adhesive layer from a location adjacent the outer face of the first structure and for receiving any subsequent pulses reflected from portions of the composite construction, whereby a first reflected pulse may be reflected from the first surface of the first structure and at least a second reflected pulse may be subsequently reflected from the interface between the first structure and the adhesive layer; and

means responsive to the reception, by the pulse transmitting and receiving means, of the first and second reflected pulses, and any third pulse reflected from the interface between the adhesive layer and the second structure, for producing an output signal indicative of effective bonding of the adhesive layer to both structures upon the reception by the pulse transmitting and receiving means of second and third pulses of amplitudes within respective, predetermined ranges and of predetermined phases relative to the transmitted pulse.

4,184,374

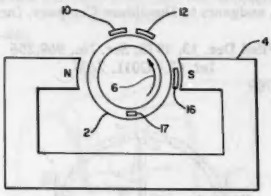
ULTRASONIC INSPECTION OF A CYLINDRICAL OBJECT

Robert B. Thompson, and Christopher M. Fortunko, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 22, 1978, Ser. No. 918,204

Int. Cl.[2] G01N *29/04*

U.S. Cl. 73—640 **12 Claims**



1. A method of inspecting an object of substantially cylindrical cross section and of electrically conductive and/or ferromagnetic material, comprising the steps of:

placing said object between a north pole and a south pole of a magnet to create a circumferential magnetic field in said object;

placing at least one electromagnetic transducer adjacent said magnetic field in said material;

passing an electrical signal through said transducer to generate elastic waves in said object;

receiving reflections of said elastic wave as it travels in said object; and

rotating said object relative to said transducer to scan said object under said transducer, whereby the existence of defects and discontinuities in said object are revealed by said reflections.

4,184,375

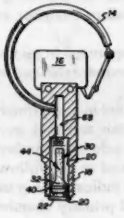
PRESSURE INSTRUMENT COMPENSATING BLADDER

Tommy L. Gray, Dallas, Tex., assignor to Span Instruments, Inc., Plano, Tex.

Filed Aug. 21, 1978, Ser. No. 934,701

Int. Cl.[2] G01L *7/00*

U.S. Cl. 73—706 **6 Claims**



1. A compensating bladder for a pressure responsive device connected to a socket which in turn is connected to a source of pressure to be sensed comprising:

a hollow, generally rectangular portion having a first pair of substantially flat and parallel sidewalls, a second pair of curvilinear sidewalls joining the parallel side walls and first and second ends, said first end being closed and said second end being open;

a generally cylindrical portion having first and second ends, said first end being open and integrally joined along concave arcuate sections to said second end of said generally

rectangular portion, said second end being open to the source of pressure; and

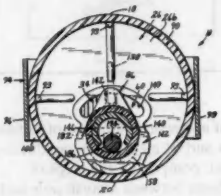
the compensating bladder being disposed within the socket for axial movement therein in response to a pressure differential presented by the source of pressure.

4,184,376

PRESSURE SENSITIVE INDICATING DEVICE

Timothy J. Thomas, and Harold A. Manguson, both of Minneapolis, Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Dec. 13, 1978, Ser. No. 969,256
Int. Cl.[2] G01L 7/06
U.S. Cl. 73—709 **26 Claims**



1. A pressure sensitive indicating device comprising:

a housing defining a primary chamber having a generally cylindrical portion and an indicating portion extending therefrom, said cylindrical portion having a first end, a second end and an axis extending between said ends in a first direction;

a hollow bellows-type diaphragm having a first axial end secured to said housing adjacent said first end and a second axial end received within said cylindrical portion for extending and retracting movements therein along said axis;

means for sealing said second axial end of said diaphragm to form a secondary chamber within the hollow interior of said diaphragm;

first aperture means for providing fluid communication between said primary chamber and the exterior of said housing;

second aperture means for providing fluid communication between said secondary chamber and the exterior of said housing;

a follower element supported in said cylindrical portion and coupled to said second axial end of said diaphragm for motion therewith;

biasing means supported in said primary chamber for biasing said follower element and said second axial end toward the first end of said primary chamber's cylindrical portion;

indicator means coupled to said follower element for movement therewith to indicate the position of said follower element within said primary chamber in response to fluid pressure applied to at least one of said aperture means, said indicator means being visible from a viewing face of said housing, said viewing face being transverse to the axis of the primary chamber's cylindrical portion;

releasable locking means for locking said follower element and said indicator means against the biasing force of said biasing means at a plurality of positions along a path of travel of said follower element toward the second end of said primary chamber's cylindrical portion; and

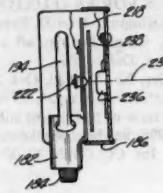
release means for releasing said locking means to allow said follower element to move toward the first end of said cylindrical portion under the biasing force of said biasing means, said release means extending generally transverse to the axis of said primary chamber's cylindrical portion and being actuatable from said viewing face of said housing.

4,184,377

HYDRAULIC PRESSURE TRANSDUCER WITH ELECTRICAL OUTPUT

Harold C. Hubbard, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Division of Ser. No. 842,477, Oct. 17, 1977, Pat. No. 4,128,146, which is a division of Ser. No. 787,548, Apr. 14, 1977, Pat. No. 4,076,327, which is a division of Ser. No. 615,234, Sep. 22, 1975, Pat. No. 4,033,630. This application Aug. 14, 1978, Ser. No. 933,636
Int. Cl.[2] G01L 7/04
U.S. Cl. 73—733 **3 Claims**



1. A hydraulic transducer comprising a support base including means adapted for connection to a hydraulic input line, a Bourdon tube of generally arcuate configuration mounted to said support base, linkage means connected to said tube to provide rotational motion about a first axis disposed internally of said arcuate configuration as a function of flexure of said tube, shutter means connected to said linkage means to rotate in a plane about said first axis, support means fixedly mounted to said support base on one side of said shutter means, a generally cylindrical enclosure mounted to said support base and including an end cover removably carried in fixed position adjacent and substantially parallel to said shutter means on a side thereof remote from said support means, light emitting means and light responsive means mounted on opposite sides of said shutter means in alignment on a second axis parallel to said first axis at a first radial distance from said first axis, the periphery of said shutter means in said plane having at least a first portion at a radial distance from said first axis which is greater than said first distance and a second portion at a radial distance from said first axis which is less than said first distance, one of said light emitting means and said light responsive means being mounted on said support means and the other of said light emitting means and said light responsive means being mounted on said end cover.

4,184,378

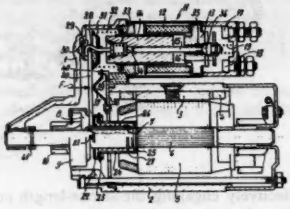
STARTER MOTOR FOR AN INTERNAL COMBUSTION ENGINE

Alfred B. Mazzorana, Venissieux, France, assignor to Societe de Paris et du Rhone, Lyon, France

Filed Aug. 16, 1978, Ser. No. 934,038
Claims priority, application France, Aug. 30, 1977, 77 26787
Int. Cl.[2] F02N 11/02
U.S. Cl. 74—7 A **5 Claims**

1. A starter motor assembly for an internal combustion engine provided with a drive gear, the starter motor assembly comprising a pinion axially movable for engagement with the drive gear, an electric motor comprising an armature mounted on an armature shaft, a drive device carried by the armature shaft for axial movement thereon to move the pinion axially, a helical groove connection between the armature shaft and the drive device whereby upon rotation of the armature relative to the drive device the drive device will move axially of the armature shaft, a return spring urging the pinion and drive

device in a direction axially to retract the pinion from the drive gear, an electro-magnetic switch having a moving contact and which when in a contact closed condition provides for the supply of electric current to the electric motor to cause rotation of the armature thereof, a yoke connected between the moving contact and the drive device to urge the drive device in a direction to engage the pinion with the drive gear responsive to movement of the moving contact in a contact closing



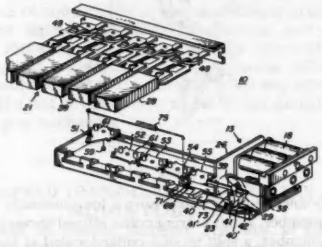
direction, a case surrounding a helically grooved tubular portion of the drive device and secured at one end against axial movement relative to the armature shaft, a stop on the said tubular portion of the drive device, and a cap retained over the other end of the case, the return spring bearing at opposite ends against the cap and the stop and the yoke being resiliently charged between the cap and the drive device when the pinion is in a rest position retracted from the drive gear.

4,184,379

TUNING APPARATUS

Louis A. Bevacqua, Des Plaines, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 11, 1978, Ser. No. 904,827
Int. Cl.[2] H03J *1/06, 1/08;* G05G *1/02*
U.S. Cl. 74—10.33 **5 Claims**



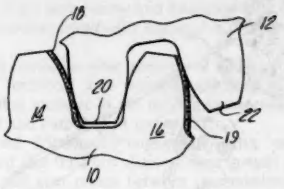
1. A compact low profile pushbutton tuning apparatus comprising:
- a frame,
- tuning means supported by said frame tunable to positions representative of desired frequencies,
- pushbutton assemblies each including a settable cam mounted on said frame for actuation of said tuning means to a desired frequency,
- gear segment members pivotally supported on said frame arranged for an engagement with each of said settable cam upon actuation of the corresponding pushbutton assembly,
- each of said gear segment members being arranged in a gear train whereby pivoting movement of one is imparted to all of them,
- slide bar means positioned at one end of said gear train being connected to one of said gear segment members and drivingly connected to said tuning means,
- said bar means and gear segment members being maintained in a balanced condition until such time as a one of said pushbutton assemblies is actuated to cause engagement of its associated cam with a one of said gear segment members to move said tuning means to a predetermined position without any lost motion thereto.

4,184,380

GEARS HAVING RESILIENT COATINGS

Evgeny I. Rivin, 1114 Pierre, Windsor, Ontario, Canada

Filed Mar. 10, 1978, Ser. No. 885,400
Int. Cl.[2] F16H *55/16*
U.S. Cl. 74—461 **13 Claims**



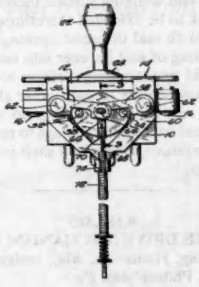
1. A gearing system for transmitting mechanical power, comprising:
- first and second rigid gears supported in meshing engagement so that surfaces on at least one engaged pair of teeth oppose one another at any instant; and
- resilient means positioned between engaged teeth of a pair having such physical characteristics and thickness that the sliding components of motion of said teeth relative to one another cause a shear deformation of said resilient means sufficient to eliminate physical sliding motion between the engaged teeth.

4,184,381

SWITCH AND CABLE ACTUATOR

John Comerford, Glendale Heights, and Richard L. Lauritsen, Hoffman Estates, both of Ill., assignors to The Singer Company, New York, N.Y.

Filed Jul. 21, 1978, Ser. No. 926,929
Int. Cl.[2] F16H *37/00*
U.S. Cl. 74—471 XY **10 Claims**



1. A control device comprising,
- a casing, an actuating knob pivotally mounted in the casing for movement in a plane,
- means biasing the knob to a center position in its available travel,
- a member moveable between a normal position and an actuated position,
- and means connected to said member and responsive to movement of said knob in said plane in either direction

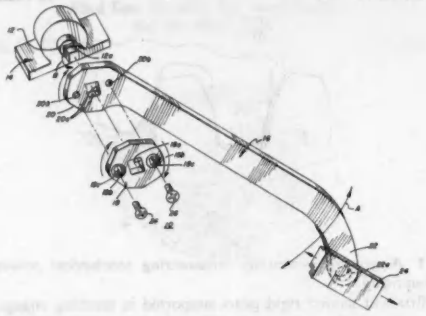
from said center position to move said member to its actuated position.

4,184,382

LEVER ARM ASSEMBLY

Ronald E. Redman, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Dec. 1, 1977, Ser. No. 856,316
Int. Cl.[2] F16B *43/00, 29/00, 35/00*
U.S. Cl. 74—522 **7 Claims**



1. A lever apparatus adapted to be detachably mounted on a rotary shaft, comprising:

lever arm means having an opening therein dimensioned to receive a portion of said shaft extended transversely between opposite faces,

wedge plate means adapted to be shiftably mounted on one face of said lever arm and formed with an opening for said shaft extended transversely therethrough, and

at least one fastener having a threaded shank and a frustoconical wedging surface in coaxial alignment therewith adjacent a head portion for securing said wedge plate means to said lever arm means at a point outwardly of said openings therein,

a wedging surface on at least one of said means engaged by said wedging surface of said fastener,

the other of said means including a threaded opening for receiving the threaded shank of said fastener and said one means including a generally oblong shaped opening aligned with said wedging surface thereof permitting said fastener shank to be extended therethrough into threaded engagement with said threaded opening,

whereby threading of said fastener into said threaded opening causes said two wedging surfaces to engage and shift said two means relative to each other along the elongate direction of said oblong opening, to shift the relative positions of said two shaft openings to more tightly clamp the lever apparatus against a said shaft inserted in said two shaft openings.

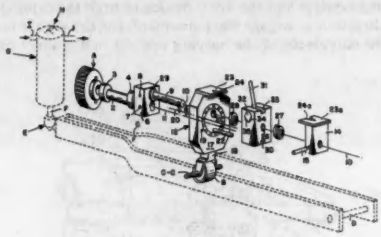
4,184,383

DUAL STROKE DRIVE MECHANISM FOR PUMPS

Harvey T. Downing, Huntsville, Ala., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 8, 1978, Ser. No. 884,523
Int. Cl.[2] G05G *1/00*
U.S. Cl. 74—571 R **8 Claims**

1. A dual stroke drive mechanism for reciprocating a piston in a cylinder, comprising eccentric means having a yoke connected to an output member, crank means for driving the eccentric means in two modes to reciprocate the output member through two common paths each having a different stroke length, said crank means having a crank arm, a crank shaft, and a crank arm extension extending radially outward from the crank shaft, stroke-length controlling means arranged to engage the yoke for driving the eccentric means in one mode or to engage the crank arm extension for driving the eccentric means in the other mode having a different stroke length and



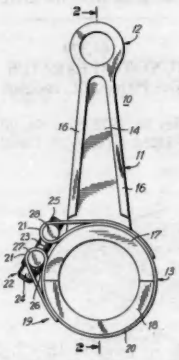
means for selectively engaging the stroke-length controlling means with the yoke and with the crank arm extension respectively.

4,184,384

PISTON CRANKSHAFT CONNECTING ROD

Melvin Levine, 330 E. 79th St., New York, N.Y. 10021

Filed Apr. 13, 1978, Ser. No. 896,137
Int. Cl.[2] G05G *1/00*
U.S. Cl. 74—579 E **7 Claims**



1. A connecting rod comprising a longitudinally extending column member, a first bearing collar affixed to one end of said column member, a split second collar located at the opposite end of said column member and including a pair of separable, interfitting inner and outer split collar sections and a peripherally adjustable continuous elongated flexible anchoring member extending about and tightly encircling the outer faces of said inner and outer split collar sections to releaseably lock said inner and outer split collar sections in assembled condition.

4,184,385

OUTPUT SPLIT-TYPE MECHANICAL AND HYDRAULIC TRANSMISSION

Hiroaki Maeda, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 11, 1977, Ser. No. 814,718
Claims priority, application Japan, Jul. 14, 1976, 51-83756
Int. Cl.[2] F16H *47/04*
U.S. Cl. 74—687 **40 Claims**

1. An output split-type mechanical and hydraulic transmission comprising:

(a) an input shaft;

(b) an output shaft;

(c) first and second hydraulic pump motors hydraulically connected to each other, and at least said first pump motor having a variable hydraulic capacity and being drivingly connected to said input shaft;

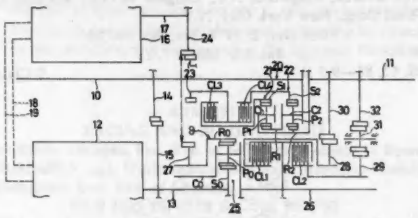
(d) a first differential gear mechanism including at least three elements and comprising a first planetary gear unit having,

(1) a first sun gear forming the third element drivingly connected to said second pump motor;

(2) a first carrier rotatably supporting a first pinion meshed with said first sun gear and forming the second element drivingly connected to said output shaft; and

(3) a first ring gear meshed with said first pinion and forming the first element drivingly connected to said input shaft;

(e) a second differential gear mechanism including at least three elements and comprising a second planetary gear unit having,



(1) a second sun gear forming the first element drivingly connected to said input shaft;

(2) a second carrier rotatably supporting a second pinion meshed with said second sun gear and forming the second element selectively connected to said output shaft; and

(3) a second ring gear meshed with said second pinion and forming the third element drivingly connected to said second pump motor; and

(f) a clutch means for selectively cooperating with said elements of said differential gear mechanisms to establish different input-output speed ratio ranges, said clutch means including first clutch means for selectively connecting said second element of said second differential gear mechanism to said output shaft to thereby selectively provide a first power train by means of said second differential gear mechanism.

4,184,386

MULTI-SPEED TRANSMISSION, ESPECIALLY FOR MOTOR VEHICLES

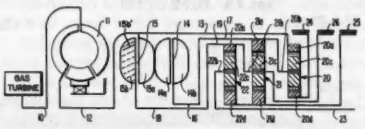
Hans-Joachim M. Förster, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 4, 1971, Ser. No. 168,908

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1970, 2038600

Int. Cl.² F16H *57/10*

U.S. Cl. 74—688 **74 Claims**



1. A multi-speed transmission comprising:

transmission input shaft means,

transmission output shaft means,

gear means including gear members interposed between said input and output shaft means, said gear means being selectively drivingly connectible between said input and output shaft means in a plurality of transmission ratios corresponding to at least three different transmission speeds,

fluid circulation means including fluid units interposed between said input and output shaft means for selectively coupling said input shaft means to respective gear members of said gear means in response to filling and emptying of respective ones of said fluid units,

and a plurality of frictionally engageable drive establishing means for selectively frictionally engaging respective ones of said gear members and fluid units in such a manner that the driving connection of said gear members and fluid units with respect to one another is changed in response to changes in the engagement and disengagement conditions of the respective frictionally engageable drive establishing means,

wherein the respective gear members of said gear means are under a tractional load when functioning as a torque transmitting member in the driving connection between the input and output shaft means,

wherein said frictionally engageable drive establishing means and said fluid circulation means include means for shifting said gear means between transmission ratios by filling and emptying respective fluid units of said circulation means and by selectively engaging and disengaging respective frictionally engageable drive establishing means such that the respective interconnections between said gear members and the input and output shaft means are shifted between the respective transmission ratios, and wherein said fluid circulation means and said frictionally engageable drive establishing means include means for shifting from one transmission ratio to another in such a manner that movement of each of said frictionally engageable drive establishing means from a disengaged to an engaged position takes place only when the respective gear members and fluid units being engaged thereby are not under a tractional load.

4,184,387

VEHICLE FOR CIVIL ENGINEERING WORK

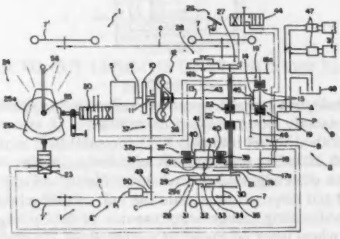
Masaaki Kiritani; Mitsugu Kanai, both of Hirakata; Denzaburo Harada, Katano; Chikashi Nishida, Sakai; Yoshiyuki Asanuma, Uji; Kenji Ikeda, and Kouzi Masutani, both of Sakai, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed May 3, 1977, Ser. No. 793,324

Claims priority, application Japan, Jul. 21, 1976, 51-86908; Jan. 14, 1977, 52-3141

Int. Cl.² F16H *37/06*; B62D *11/00, 11/10*

U.S. Cl. 74—720.5 **5 Claims**



1. A vehicle for civil engineering work, comprising: an engine; a torque converter; a pair of planetary gearing sets, each with a sun gear, planetary gears pivotally journaled on a planetary gear support, and an outer gear, operatively connected with the torque converter to take input power to the outer gear from output lateral side, operatively connected with the planetary gear support of the respective one of the planetary gearing sets; a turning drive mechanism with one input

shaft and two output shafts to rotate in opposite directions one with the other, with the input shaft operatively connected with input side of the torque converter, and with the output shafts each operatively connected with the sun gear of the planetary gearing, switching over means for selectively switching over rotation directions of the output shafts of the turning drive mechanism driven from the input side of the torque converter rotating in a constant direction, a forward and rearward travel changing over mechanism provided in between the torque converter output side and the planetary gearing sets, for changing over directions of input rotations to the planetary gearing sets, with neutral position for releasing the input rotations to the planetary gearing sets, a speed changer mechanism shiftable betwen two gearing positions for high and low speeds, respectively, provided in between the forward and rearward travel changing over mechanism and the planetary gearing sets, wherein the forward and rearward travel changing over mechanism comprises at least a bevel gear provided on output shaft of the torque converter, a pair of bevel gears in constant meshing engagement with the said bevel gear, a shaft which is provided with spur gears having different teeth numbers and on which the said pair of bevel gears are loosely fitted for free rotation relative hereto, and a pair of hydrostatic clutches for separately engaging and disengaging the said shaft and the said pair of bevel gears, respectively, and wherein the speed changer mechanism comprises at least two speed changer gears in mesh with the spur gears having different teeth numbers, respectively, a shaft on which the speed changer gears are loosely fitted for free rotation relative hereto, and clutches for separately engaging and disengaging the shaft and the speed changer gears, respectively.

4,184,388

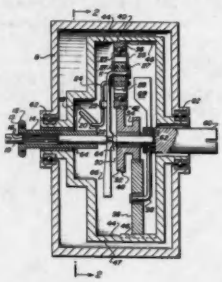
INFINITELY VARIABLE SPEED TRANSMISSION

Albert Sfredda, 2106 Iris Pl., Bethlehem, Pa. 18018

Continuation-in-part of Ser. No. 716,990, Aug. 24, 1976, Pat. No. 4,112,788. This application Feb. 3, 1978, Ser. No. 874,775

Int. Cl.² F16H *57/10*

U.S. Cl. 74—793 **9 Claims**



1. An infinitely variable speed transmission comprising:
(a) a rotatably mounted input drive shaft;
(b) a toothed wheel rotatably linked to said drive shaft, said wheel including an outer and an inner perimeter;
(c) force directing means moveably mounted on said drive shaft and disposed proximate the hub of said wheel, said force directing means being capable of fixidly engaging said wheel inner perimeter at a point along the path of its pivot;
(d) actuating means for positioning and fixidly setting said force directing means;
(e) a first toothed circular raceway means rotatably engaging said wheel along a part of the outer perimeter of said wheel;
(f) sun gear means concentrically affixed to said circular raceway means;
(g) a second toothed circular raceway means rotatably engaged with said wheel along another part of the outer perimeter of said wheel at a point 180° from said first raceway engagement;
(h) ring gear means concentrically affixed to said second circular raceway means;
(i) a planetary gear rotatably engaging both said sun gear and said ring gear; and,
(j) output drive means rotatably connected to said planetary gear whereby variable settings of said force directing means causes input driving forces to be transmitted variously to said sun gear and said ring gear thereby producing variable speeds of said planetary gear and said output drive means.

4,184,389

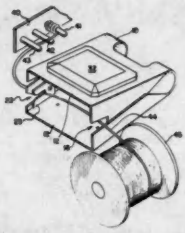
MANUAL WIRE CUT AND STRIP TOOL

Jarda Dvorak, Ringwood, N.J., assignor to O.K. Machine and Tool Corp., New York City, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,857

Int. Cl.² H02G *1/12*

U.S. Cl. 81—9.5 B **9 Claims**



1. a manual wire cutting and insulation stripping tool comprising a generally U-shaped resilient body having opposed arm portions of sufficient lateral area to accomodate the fingers and thumb of a user for squeezing together the arm portions from an open to a closed position, each of said arm portions having along one side adjacent flange portions extending toward the opposed arm portions forming along said one side a cutter slot for receiving an insulated wire and capable when the body is squeezed to the closed position of severing the insulated wire when in the cutter slot, and means mounted along the opposite side of one of said arm portions forming a stripping slot for receiving the insulated wire and slicing through the insulation whereby when the wire is pulled through the stripping slot the insulation is stripped therefrom, said stripping slot being spaced from the cutter slot by the width of the body as measured between its sides.

4,184,390

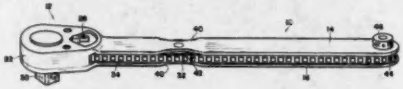
RATCHETING WRENCH WITH ROTATING FEATURE

James P. Evans, Oklahoma City, Okla., assignor to Paul H. Johnson, Tulsa, Okla., a part interest

Filed Dec. 22, 1977, Ser. No. 863,321

Int. Cl.² B25B *17/00*

U.S. Cl. 81—57.3 **6 Claims**



1. An improved ratcheting wrench comprising:
an elongated handle adaptable to be engaged by the hand of the user by which torque may be applied to a member to

be rotated, the handle having a top, bottom, opposed sides, and opposed ends;

a ratchet member rotatably supported at one end of said handle having means to engage a member to be rotated, the rotational axis of the ratchet member being perpendicular said handle top and bottom, the ratchet member being rotatably locked to said handle when said handle is rotated relative to the ratchet member axis in one direction and free to rotate about said member in unlocked relationship when the handle is rotated in the opposite direction;

an endless belt carried by said handle and engaged by and rotated with said ratchet member, said belt being in a plane parallel said handle top and bottom; and means in areas on opposite of said handle sides intermediate the handle ends, whereby the belt is exposed exteriorly of the handle on both sides and may be engaged by the thumb on one side and fingers on the other side by the user to enable the user to apply rotational torque to said ratchet member by manual contact with said belt and by moving his thumb in one direction and his fingers in the opposite direction.

4,184,391

FACING AND BORING HEAD

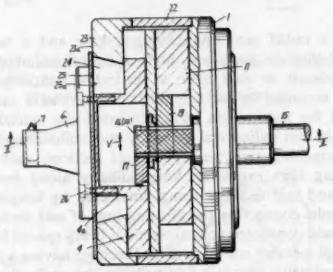
Otto Eckle, Löchgau, Fed. Rep. of Germany, assignor to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,750

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 7720194[U]

Int. Cl.[2] B23B *41/00, 3/00*

U.S. Cl. 82—1.2 **5 Claims**



1. A facing and boring head comprising a supporting member in the form of a circular disc to be secured by its back to the spindle of a lathe or the like, a slide which is displaceable radially at the front of the supporting member in a guide extending perpendicularly and symmetrically with respect to the axis of rotation and to which a tool holder can be secured, a counterweight which is displaceable in a guide in the opposite radial direction between the front of the supporting member and the slide and the mass of which corresponds to that of the slide including tool holder and tool, and a gear which causes an opposite and equal radial movement of slide and counterweight depending on a positioning element, wherein the improvement comprises a cylindrical housing which surrounds the slide, the counterweight, their guides and the gear and is flanged-mounted on the supporting member, the housing including, at its front adjacent to the tool holder, a cover with a plane end face and an elongated slot extending in the displacement direction of the slide for the passage of a portion of the slide, and a cover plate which covers the elongated slot completely and bears with a plane face against the end face of the cover, said cover plate being provided on said portion of the slide.

4,184,392

WEB CUTTING MACHINES

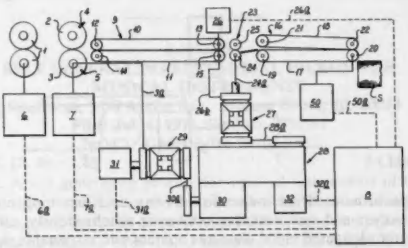
David Wood, Bristol, England, assignor to Masson Scott Thrissell Engineering Ltd., London, England

Filed Dec. 22, 1977, Ser. No. 863,509

Claims priority, application United Kingdom, Dec. 30, 1976, 54360/76; Aug. 5, 1977, 3267/77

Int. Cl.[2] B65H *5/24*

U.S. Cl. 83—88 **3 Claims**



1. Sheet feeding apparatus for web cutting machines comprising feed means for said web, means for cutting said web transversely to its direction of travel at spaced positions therealong to produce a succession of sheets, means to drive said feed means and said cutting means, a primary conveyor, further conveyor means, said primary conveyor being arranged to receive sheets from said cutting means and feed them at a first speed towards said further conveyor means, means for driving said primary conveyor, and further means to drive said further conveyor means at a speed which is cyclically variable between said first speed and a second and lower speed, the improvement characterized by said further drive means including a variable ratio gear box having an input shaft and an output shaft, a cyclic speed unit adapted to receive a constant speed input and deliver a cyclically varying speed output, first and second differential gears each having three input/outputs, a control motor, wherein one input/output of said first differential gear is connected to the output shaft of said gear box, a second input/output of said first differential gear being connected to said means for driving said primary conveyor, the third input/output of said first differential gear being connected to said further conveyor means, one input/output of said second differential gear is connected through said cyclic speed unit to the input shaft of said gear box, a second input/output of said second differential gear being connected to said drive means for said cutting means, and the third input/output of said second differential gear being connected to said control motor.

4,184,393

SHEAR TO CUT LENGTHS OF ELONGATED METAL ELEMENTS

Pierre Bastien, Sainte Foy les Lyon, France, assignor to Etablissements A. Mure, Rhone, France

Filed May 8, 1978, Ser. No. 903,921

Claims priority, application France, May 12, 1977, 77-15188

Int. Cl.[2] B26D *5/40, 7/06*; B23Q *7/00*

U.S. Cl. 83—155.1 **5 Claims**

1. A work station for cutting lengths of elongated, rigid metal elements, the station comprising:

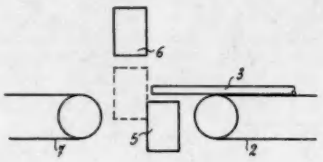
a cutting stage for cutting elongated metal elements, said cutting stage including shear means formed by two cutting members at least one of which is moveable;

an incoming conveyor to convey elongated metal elements to be cut into said cutting stage, said incoming conveyor being an endless belt having an antiskid surface on which the elements are to be carried;

an outgoing conveyor to convey cut elongated, rigid metal elements away from said cutting stage, said outgoing

conveyor being an endless belt with an antiskid surface on which cut lengths of the elements are to be carried;

a retractable stop formed by a moveable one of said cutting members which when in a given non-cutting position engages the elongated metal elements which are to be cut with a non-cutting surface and functions as an alignment block to align the elongated metal elements and to establish a reference point from which the length to be cut is measured; and



synchronous drive means for driving said incoming conveyor and said outgoing conveyor synchronously, after the elongated metal elements contact said retractable stop and said cutting member which functions as an alignment block returns to a second non-cutting position, to advance the metal elements to a given length to be cut.

4. A work station for cutting lengths of elongated metal elements, according to claim 1, further including

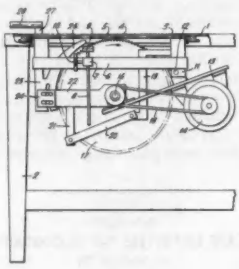
a lateral disengagement means for the lateral disengagement of the cut elongated metal elements from said outgoing conveyor.

4,184,394

MOTOR-DRIVEN SAW HAVING A CIRCULAR SAW BLADE

Arne Gjerde, Jevnaker, Norway, assignor to A/S Norcem, Oslo, Norway

Filed Mar. 28, 1978, Ser. No. 891,004
Claims priority, application Norway, Apr. 1, 1977, 771173
Int. Cl.[2] B27B *5/24*
U.S. Cl. 83—477.1 **6 Claims**



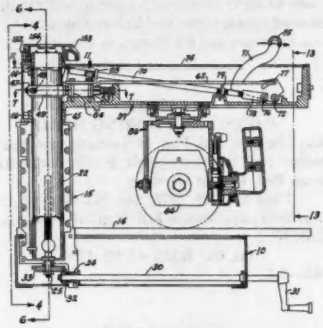
1. Table-mounted circular sawing apparatus comprising a work table structure including a table top, means defining a slot in said table top, mounting means below said table top for a circular saw, said mounting means including support means and a mounting frame pivotally connected to said support means about a pivotal axis, a circular saw blade carried by said mounting frame for rotation about a saw blade axis, said saw blade being aligned with said slot, drive means for rotating said saw blade about said saw blade axis, said mounting frame being pivotally movable about said pivotal axis between a first position in which said blade is beneath said table top and a second position in which an upper portion of said blade extends through said slot and projects above said table top, an operating bar connected with said mounting frame for moving said frame between said first and second positions, said operating bar being substantially coplanar with said saw blade and extending upwardly through said slot, an upper end of said operating bar projecting above said table top and being provided with handle means and linkage means connected between said operating bar and said support means for maintaining a fixed distance between said operating bar and said saw blade axis measured in the direction of the line of fall of the saw blade plane.

4,184,395

RADIAL ARM SAW

Donald L. Blachly, Chesterfield; Brian R. Hochstatter, Florissant, and Robert L. O'Hearne, Kirkwood, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 10, 1978, Ser. No. 895,182
Int. Cl.[2] B27B *5/20*; B23D *45/02*
U.S. Cl. 83—486.1 **9 Claims**



1. In a radial arm saw having a base and a worktable mounted thereon, a vertical, hollow, cylindrical support column mounted on said base, a vertical cylindrical member slidably mounted in said support column, and a radial arm mounted for rotation on an upper exteriorly extending end portion of said cylindrical member, said hollow support column comprising two semicylindrical sections each having connecting lugs extending longitudinally along both sides thereof and said sections being connected by longitudinally spaced bolts connecting the meeting lugs of said sections, the walls of said connected column sections being spaced from said cylindrical member and each of said sections having a plurality of longitudinally spaced guide pads on the walls thereof extending radially inward and having arcuate surfaces contiguous with and substantially the same curvature as the surface of said cylindrical member, said guide pads on said opposite column sections being transversely aligned in pairs and having such radial inward extension that said cylindrical member is tightly gripped and said support column walls are flexed when said connecting bolts are tightened sufficiently, whereby a uniform sliding fit of said cylindrical member in said longitudinally spaced guide pads may be achieved by individual adjustment of said longitudinally spaced connecting bolts.

4,184,396

LOCKING JOINT MANUFACTURE

Otto P. Hafner, 1321 Paddock Way, Cherry Hill, N.J. 08034

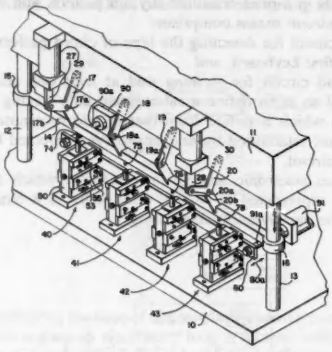
Filed Jan. 31, 1977, Ser. No. 764,470
Int. Cl.[2] B26D *5/18*
U.S. Cl. 83—623 **27 Claims**

1. A machine for operating on a workpiece from opposite sides by carrying out relative displacements along coaxial paths between a plurality of tool elements, the machine comprising:

first and second means for respectively holding first and second ones of the tool elements coaxially in positions confronting the same one side of the workpiece, the hold-

ing means being reciprocably moveable parallel to the tool displacement paths, and each holding means having a plane surface portion inclined with respect to the displacement paths; and

first and second actuating means for producing the reciprocal movements of the first and second holding means respectively,



each actuating means having a plane surface portion which mates with the inclined plane surface portion of the respective holding means actuated thereby, and being reciprocable along a path which forms angles with the tool element displacement paths and with the plane surface of the respective holding means.

4,184,397

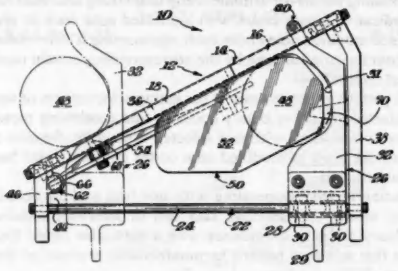
FOOD SLICER

Frank W. Jones, Wilmington, Del., assignor to Redco, Inc., Wilmington, Del.

Filed May 17, 1978, Ser. No. 907,158

Int. Cl.[2] B26D *4/02*

U.S. Cl. 83—874 **13 Claims**



3. A device for slicing a food object comprising a substantially vertical hollow triangular enclosure frame having a substantially wedge-shaped interior space bounded by three sides, two of the sides being relatively long and one being relatively short, a longer side carrying a rack of parallel cutting blades having sharp edges disposed inwardly towards the interior of the frame, an other longer side being disposed opposite the cutting blades, the short side joining adjacent ends of the longer side to each other at a distance sufficient to allow the food object to be received within the interior of the frame adjacent the short side, a segmented pusher having spaced fingers inserted between the blades, a slide connector connecting the pusher to the other longer side for movement back and forth along its length. the fingers being long enough to maintain them inserted through the cutting blades while the pusher is traversed across the interior of the frame whereby an object disposed in front of the pusher is pushed across and through the blades to slice it, a vertically movable loading platform is mounted on a lower portion of the frame for movement from a raised position relative to the interior of the frame for conveniently receiving a food object to a lower position disposed within the interior of the frame below the path of movement of the pusher whereby an object is loaded into position to be sliced.

4,184,398

SELF GENERATING ELECTRICAL PICKUP FOR MUSICAL INSTRUMENTS

Abe Siegelman, 9303 Major Ave., Morton Grove, Ill. 60053

Filed Jul. 6, 1976, Ser. No. 702,767

Int. Cl.[2] G10H *3/00*; H01F *7/02*

U.S. Cl. 84—1.15 **9 Claims**

1. A self generating pickup, for musical instruments of the percussion type having at least one vibrating element containing magnetic material, a composite magnetic core comprised of a ceramic magnet, over whose plane surface the magnetic flux is reasonably uniform, bonded to an iron structure of length exceeding the length of the ceramic magnet around which is wound many turns of conducting wire to form an electrical coil for connection to an amplifier and loudspeaker, said ceramic magnet polarized along its thickness with a North magnetic pole on one surface and a South magnetic pole on the opposite surface, said pickup being oriented so that the plane surface of the ceramic magnet is in proximity to and parallel to a surface of the vibrating element, said pickup magnetic core having a surface placed in proximity to and parallel to the surface of the vibrating element such that when such vibrating element is struck with a mallet the vibrations are set up in the vibrating element causing a magnetic flux change in the coil surrounding the magnetic core which causes an electrical signal to be generated in the coil which replicates the motion of the vibrating element.

4,184,399

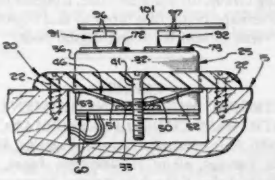
MAGNETIC PICKUP ASSEMBLY

Sergio P. Zuniga, P.O. Box 187, Pacific Palisades, Calif. 90272

Filed Aug. 27, 1976, Ser. No. 718,385

Int. Cl.[2] G10H *3/08*

U.S. Cl. 84—1.15 **9 Claims**



1. In a musical instrument having a plurality of vibratable strings each in magnetic relation with at least one polepiece of a magnetic pickup, the provision of a magnetic pickup assembly comprising:

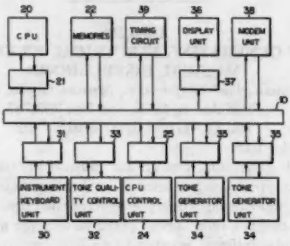
a plurality of magnetic pickups, one for each string, wherein the magnetic circuit for each pickup includes a polepiéce with a surface at one end in magnetic relation with a string, the polepiece surface having an elongated rectangular shape, the polepiece being rotatable to vary the angle formed between the string and the elongated shape of the polepiece surface to provide variation of the tonal quality of the transduced sound from the string; and

adjusting means for varying the distance between all pickups and all strings simultaneously.

4,184,400
ELECTRONIC MUSICAL INSTRUMENT UTILIZING DATA PROCESSING SYSTEM

Koji Niimi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 13, 1977, Ser. No. 860,100
Claims priority, application Japan, Dec. 17, 1976, 51-150830
Int. Cl.[2] G10F *1/00*
U.S. Cl. 84—1.03 20 Claims



1. An electronic musical instrument comprising:

a central processing unit having arithmetic logics, control circuits, and registers,

memories for storing the programs related to the data processing by said central processing unit, and the necessary data for controlling the generation of a musical tone,

a CPU control unit for transmitting control signals to said central processing unit,

a common data bus to which said central processing unit, said memories, and said CPU control unit are connected,

terminal units connected to said common data bus, said terminal units including equipments for producing musical tones and comprising at least a tone generator unit, a tone quality control unit, an instrument keyboard unit,

key on-off signals generated at said instrument keyboard unit and tone quality control signals selected at said tone quality control unit being processed to produce a musical tone at said tone generator unit corresponding to said key on-off signals and said selected tone quality control signals, and wherein:

said tone generator unit has a digital filter, the output of said digital filter being connected to the input of said digital filter after a predetermined time delay, constituting a recycling circuit for a digital code, a digital representation of a waveshape being first input to said digital filter as the initial value of said recycling digital code.

4,184,401
ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC BASS CHORD PERFORMANCE DEVICE

Teruo Hiyoshi; Akira Nakada; Shigeru Yamada; Eiichiro Aoki, and Eiichi Yamaga, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 17, 1977, Ser. No. 825,443
Claims priority, application Japan, Aug. 23, 1976, 51-100354; Sep. 8, 1976, 51-107445
Int. Cl.[2] G10H *1/00, 5/00*
U.S. Cl. 84—1.03 27 Claims

1. An electronic musical instrument comprising:

a first keyboard for performing chord tones;

a second keyboard for performing bass tones;

circuit means connected to said first keyboard and to said second keyboard for generating chord tone signals according to a performance on said first keyboard and bass tone signals according to a performance on said second keyboard,

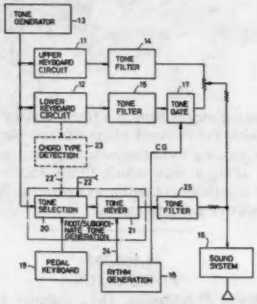
said bass tone signals being generated by said circuit means in response to the playing of only a single key on said second keyboard, said generated bass tone signals including a first signal defining a root note which is designated by said single key played on said second keyboard and at least one additional signal defining at least one subordinate note, each of said subordinate notes having a corresponding predetermined note interval with respect to said root note,

an automatic rhythm performance circuit connected to said circuit means and automatically gating said bass tone signals in a predetermined rhythm pattern, and wherein said circuit means comprises:

a first circuit for detecting the type of chord performed on said first keyboard, and

a second circuit for forming said at least one additional signal so as to define a subordinate note having a tone pitch which is shifted from that of said root note by an amount established by said chord type detected by said first circuit.

11. In an electronic musical instrument in which musical notes are represented by binary note codes in a binary sequence, the improvement comprising:



subordinate tone forming data generator means for providing a set of binary codes each indicative of a certain musical interval,

combining means for arithmetically combining said interval-indicative binary codes with a selected note code to produce modified note codes each representing a note shifted from the original note by the corresponding certain musical interval,

bass pattern generator means for gating selected sets of said interval-indicative binary codes to said combining means for combination with said selected note code, thereby to provide a set of modified note codes in a particular bass pattern, and

selecting means, cooperating with said bass pattern generator means, for selecting said sets of interval-indicative binary codes in accordance with a particular chord type so that said bass pattern harmonizes with a chord of that type.

4,184,402
ELECTRONIC MUSICAL INSTRUMENT

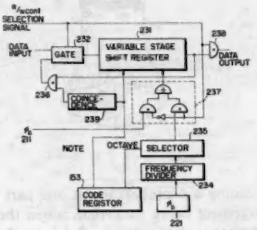
Toshio Kugisawa, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Dec. 23, 1977, Ser. No. 863,953
Claims priority, application Japan, Dec. 27, 1976, 51-157802; Dec. 27, 1976, 51-157803; Dec. 27, 1976, 51-157804; Dec. 30, 1976, 51-158637; Dec. 30, 1976, 51-158638; Dec. 30, 1976, 51-158639
Int. Cl.[2] G10H *5/00*
U.S. Cl. 84—1.26 8 Claims

1. An electronic musical instrument having waveshape memory parts for storing musical waveshapes on a time shared basis corresponding to a plurality of channels of key codes provided by turning ON and OFF of key switches, character-

ized in that the waveshape memory part of each channel is a variable-stage shift register having its number of stages set in porportion to a note frequency and storing one period of the waveshape and in that a read clock for the waveshape memory part is constant regardless of the note frequency.

6. An electronic musical instrument of the type digitally controlling an envelope, comprising an envelope control circuit in which an envelope coefficient constituting an assigned



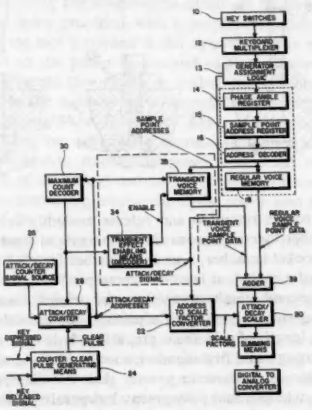
value indicating the state of the envelope is stored in each stage of a shift register, a circulating loop is formed with the shift register and an adder and the envelope coefficient from the shift register is applied to a comparator to control the output from the adder with the output level signal or an external control signal to thereby change the envelope coefficient to provide an indication of transition from one state to another, whereby the envelope coefficient of each channel is set on a time shared basis.

4,184,403

METHOD AND APPARATUS FOR INTRODUCING DYNAMIC TRANSIENT VOICES IN AN ELECTRONIC MUSICAL INSTRUMENT

John T. Whitefield, Harleysville, Pa., assignor to Allen Organ Company, Macungie, Pa.

Filed Nov. 17, 1977, Ser. No. 852,493
Int. Cl.² G10H 3/00
U.S. Cl. 84—1.11 **18 Claims**



1. In a digital electronic musical instrument having switches selectively actuable to cause the production of sounds corresponding to respective notes of a musical scale, an apparatus for introducing additional voices comprising:

means for generating note attack/decay addresses,

first decoder means for decoding said attack/decay addresses and upon decoding a predetermined count outputting a disable signal,

means for generating a note attack/decay signal,

second decoder means to receive said first decoder output and said attack/decay signal for outputting an enable signal,

means for generating sample point addresses,

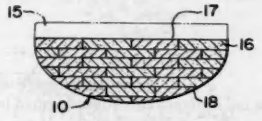
memory means for storing sample point data for a plurality of voice zones and outputting said voice zone sample point data as called for by said sample point addresses in response to said enable signal and said attack/decay addresses.

4,184,404

NECK FOR A STRINGED INSTRUMENT

Michiaki Tomioka, 3135, Zenkojimachi, Kofu-shi, Yamanashi-ken, Japan

Filed Jul. 20, 1977, Ser. No. 817,426
Claims priority, application Japan, Dec. 29, 1976, 51/178251[U]
Int. Cl.² G10D 3/00
U.S. Cl. 84—293 **4 Claims**



1. A neck for a musical instrument, dimensioned for being attached to a sound box of a musical instrument, for carrying a finger board thereon and for supporting strings of a musical instrument; said neck comprising: an elongated neck body, a head extending from one end of said neck body, and a limb extending from the other end of said neck body for attaching said neck to a sound box of a musical instrument; said neck body, head and limb each comprising a multi-layer lamination of adhesively bonded flat rectangular cross section bamboo sheets having major surfaces defined by slicing bamboo stalks in the tangential direction thereof; said neck body having an end face defining a given angle with the length dimension of said neck body; and said head mounted on said neck body parallel to said end face so that said head extends from said neck body at said given angle relative to the length dimension of said neck body.

4,184,405

STRINGS FOR MUSICAL INSTRUMENTS

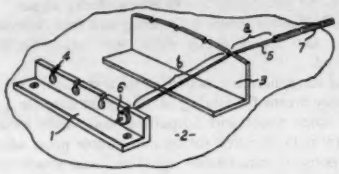
James C. How, 20, Upland Rd., Bexleyheath, Kent, England

Division of Ser. No. 608,802, Aug. 23, 1975, Pat. No. 4,037,506, which is a continuation of Ser. No. 470,286, May 15, 1974, abandoned. This application Jun. 6, 1977, Ser. No. 803,743
Claims priority, application United Kingdom, May 20, 1973, 13182/73
The portion of the term of this patent subsequent to Jul. 26, 1994, has been disclaimed.
Int. Cl.² G10D 3/00
U.S. Cl. 84—297 S **2 Claims**

1. A metal string, for a fingerboard type stringed musical instrument, consisting of a wire core having a first end and a second end, the entire length of said wire core between its first end and its second end being the sum of

(i) a first portion which extends from its first end to a point situated intermediately along the core, the length of that first portion of the core being at least about the speaking length, but less than the total speaking length, for which

the string is constructed, said first portion being loaded, and



(ii) a second portion which extends from said intermediately located point to said second end of the core, said second portion being wholly devoid of loading.

4,184,406

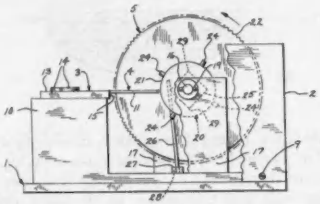
MINIATURE MANUALLY OPERABLE MUSICAL INSTRUMENT

Mary A. Panevska, Rte. 2- Pleasant Dr., Princeton, Wis. 54968

Filed Apr. 4, 1978, Ser. No. 892,215

Int. Cl.[2] G10D *13/08*

U.S. Cl. 84—408 **7 Claims**



1. A manually operable musical instrument having a base and a plurality of musical bars fixed at one end of each to the base and adapted to produce individual generally different musical tones when vibrated, characterized in that said musical bars are vibrated individually and selectively at the option of the user by means of a plurality of manually operable rotary actuators mounted on the base for free separate rotation, each actuator having a first portion destined for contact by the user to manually rotate the same and a second portion generally integral with said first portion to rotate therewith and disposed adjacent to the end of a corresponding bar, said second portion having a plurality of circumferentially spaced protrusions positioned so as to flex and release the end of the corresponding bar upon a partial rotation of the actuator thus causing the bar to vibrate upon release from contact, said second portion being formed so that its said protrusions are not touched by the user during said manual rotation, and a resilient biasing means that serves to retain the actuators out of engagement with the corresponding bars except when manually rotated and that also serves to urge said portrusions to rapidly release the corresponding bars once they are flexed.

4,184,407

ACOUSTIC DRUMS

Patrick C. Townshend, Flat 2, 94 Ledbury Rd., London W.11, England

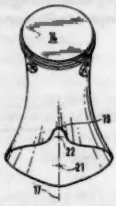
Filed Aug. 4, 1978, Ser. No. 930,870

Claims priority, application United Kingdom, Aug. 5, 1977, 32885/77

Int. Cl.[2] G10D *13/02*

U.S. Cl. 84—411 R **6 Claims**

1. A musical drum comprising a hollow elongate body open at both ends and a membrane stretched across one end of the body and secured in tension thereto in which the body increases in cross-sectional area from one end to the other, the smaller diameter end being circular in cross-section and having the membrane stretched thereacross and the larger diameter end being defined by one or more apertures, the or each aperture having a non-circular periphery of a generally regular



shape but including a protuberance at one part of the periphery, the arrangement being such that, when the membrane is struck, a first note is detectable in the central part of the or each aperture and a second note is detectable in the protuberance, the second note being one octave lower than the first note.

4,184,408

SHEAR PIN RELEASE SYSTEM

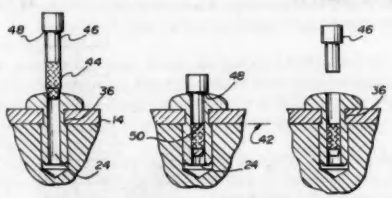
Donald L. Smith, Ste. Foy, and Michael N. Clark, Loretteville, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Jun. 13, 1978, Ser. No. 915,283

Claims priority, application Canada, Sep. 7, 1977, 286272

Int. Cl.[2] F16B *13/06*

U.S. Cl. 85—1.806 **14 Claims**

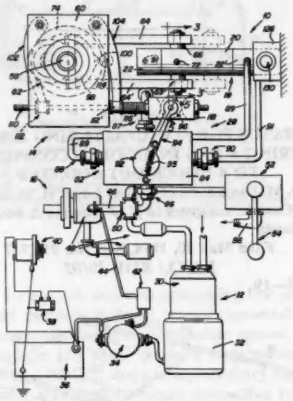


10. A rocket retention and release assembly comprising a first member forming means for connecting at least one shear pin to a rocket launcher, a second member forming part of the rear end of a rocket, at least one shear pin for connecting said first and second members together, the or each shear pin having a head and a shank with a passageway extending axially along the length of said shear pin, a first hole extending completely through said first member, a second hole in said second member having a diameter greater than the diameter of said first hole, wherein said passageway has parallel sides in longitudinal cross-section at the head end of the pin and sides which taper inwardly towards the shank end of the pin at said shank end and, when the pin is inserted into both holes of said first and second members to connect said members, the pin is expandable by a mandrel so that a shank end portion of the pin in the hole of said second member fills the cross-section of the hole.

4,184,409
HYDRAULIC ENGINE

Leslie R. Hinchman, and Robert B. Hinchman, both of San Benito, Tex., assignors to Bessie L. Caldwell, San Benito, Tex., a part interest

Filed Feb. 6, 1978, Ser. No. 875,512
Int. Cl.[2] F01C 9/00; F01L 15/00
U.S. Cl. 91—347 6 Claims

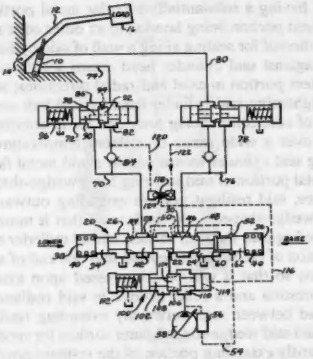


1. A hydraulic engine, comprising, in combination:
fluid pump means pumping a fluid medium under pressure;
fluid motor means connected to the pump means for being actuated by fluid medium under pressure received from the pump means, said fluid motor means comprising, in combination:
a longitudinally extending cylinder provided with a central bore extending longitudinally of the cylinder and with a slot communicating with the bore along a part of the longitudinal extent of the cylinder; a piston slidably disposed within the bore of the cylinder for reciprocating movement along the longitudinal extent of the cylinder, the piston being provided with a projection slidably received in the slot provided in the cylinder; valve means connected to the pump means and to the cylinder and forming separate flow paths to either end of the bore provided in the cylinder for sequentially directing fluid medium through the flow path and reciprocating the piston within the cylinder; a rotatably mounted output shaft; and motion translation means connected to the projection of the piston and to the output shaft for converting reciprocating movement of the piston into rotary motion of the shaft;
control means for regulating the operation of the pump means and the motor means;
wherein the valve means comprises, in combination: a valve including a block having an inlet and two outlets, and an actuator arranged in the block for blocking the outlets one at a time, a lever extending from the actuator outside of the blocks; a cam affixed to the shaft for rotation therewith; support journaling the output shaft; a pair of elongated follower members pivotally mounted in spaced relation on the support and arranged for sequentially being pivoted by engagement of the cam; coupler means connected to the members and to the lever of the actuator for oscillating the lever and sequentially directing fluid medium from one of the outlets at a time; and exhaust means connected to said valve for connecting the blocked outlet to an exhaust port.

4,184,410
LOW PRESSURE SIGNAL DRIVEN FLOW CONTROL SYSTEM

Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 15, 1978, Ser. No. 886,842
Int. Cl.[2] F15B 13/042
U.S. Cl. 91—421 3 Claims

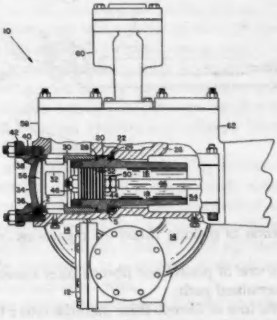


1. A hydraulic system comprising:
a bidirectional hydraulic motor having first and second fluid ports;
a pump;
a control valve for selectively connecting said pump to (a) said first port and venting said second port and (b) said second port and venting said first port;
a modulating valve interposed between said pump and said control valve for varying flow from said pump to said control valve;
a pilot for said modulating valve; and
pressure responsive means for selecting the lowest pressure at said ports and for directing a low pressure signal to said pilot.

4,184,411
SEAL RING FOR CYLINDER HEAD OF PISTON PUMPS

Dow V. Morris, and Robert J. Glahn, both of Tulsa, Okla., assignors to Wheatley Company, Tulsa, Okla.

Filed Feb. 7, 1977, Ser. No. 766,338
Int. Cl.[2] F16J 10/04; B65D 53/02
U.S. Cl. 92—171 8 Claims



1. An improved dual action piston type pump having a means for driving a piston rod with a piston attached thereto, a housing with a cylinder means surrounding said piston in said

housing, said housing having inlet means and outlet means and corresponding inlet valve means and outlet valve means, respectively, connected to said cylinder means, cylinder head means and bolt means for attaching to said housing to cover one end of said cylinder means, liner means in said cylinder means, liner retainer means between said liner means and said cylinder head means, said improvement comprising:

a seal ring abutting said cylinder head means and said liner retainer means to provide a metal-to-metal seal, said seal ring having a substantially circular metal portion with a resilient portion being bonded to an outer edge and at one end thereof for sealing along a wall of said cylinder means and against said cylinder head means which contain the resilient portion in axial and radial directions; and

upon tightening said cylinder head by said bolt means, stiffness of connection being provided for intermittent operation over a wide range of ambient temperatures to seal along said cylinder means and to avoid metal fatigue;

said metal portion of said seal ring has a wedge-shaped outer surface, said resilient portion extending outwardly from said wedge-shaped outer surface so that it must be compressed against the wall surface of said cylinder means for insertion of the seal and beyond said one end of said metal portion so that it will be compressed upon axial sealing compression and a relief groove in said resilient portion located between said outwardly extending resilient portion and said wedge-shaped outer surface for receiving the outwardly extending portion of the resilient portion upon sealing compression of the resilient portion, to form a radial sealing surface when the seal is axially compressed upon filing of the relief groove while providing the metal-to-metal seal to provide a positive mechanical seal without any voids unfilled by said resilient portion and so that extrusion does not occur as the flange cover is tightened against the seal.

4,184,412

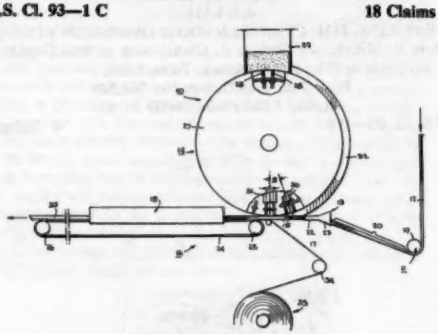
POCKET-TYPE CHARCOAL FILTER AND CIGARETTE MADE THEREWITH

Floyd V. Hall, Durham, N.C., assignor to Liggett Group Inc., Montvale, N.J.

Division of Ser. No. 779,026, Mar. 18, 1977. This application Mar. 20, 1978, Ser. No. 888,265

Int. Cl.[2] A24C *5/50*

U.S. Cl. 93—1 C **18 Claims**



1. A method of making filters for cigarettes comprising the steps of

moving a tow of plasticized fibrous filter material through a predetermined path;

passing the tow of fibrous filter material into a funnel-shaped passageway from below the level of the passageway to press the web against the lower wall of the passageway to form a U-shaped trough;

injecting a sequence of charges of particulate filter material into the U-shaped trough downstream of the passageway in spaced apart manner;

thereafter enveloping the fibrous filter material about the injected charges; and

wrapping and sealing a strip of plug wrap paper about the fibrous filter material and enveloped charges of particulate filter material to form an endless rod.

4,184,413

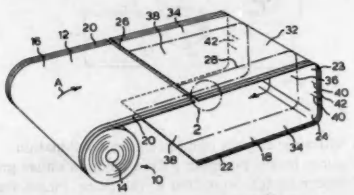
APPARATUS FOR MANUFACTURING A BAG AND DELIVERING A BAG IN AN OPEN CONFIGURATION TO A CHECK-OUT COUNTER

Marinus J. M. Langen, Rexdale, and Edgar H. Strauss, Toronto, both of Canada, assignors to H. J. Langen & Sons Ltd., Rexdale, Canada

Filed May 30, 1978, Ser. No. 910,737

Int. Cl.[2] B31B *29/02*

U.S. Cl. 93—19 **26 Claims**



1. A bag forming machine for manufacturing bags from an elongated web of bag forming material having a first portion extending longitudinally thereof from which the front, bottom and back walls of a bag are formed, said first portion being bounded on either side by co-extensive side wall forming portions comprising:

(a) a frame;

(b) a former mounted in said frame, said former having a first support face and a second support face disposed opposite and spaced from one another and a bottom support face extending between said first and second support faces at one end thereof and a pair of oppositely disposed side support faces, said first, second, bottom and side support faces being arranged in the configuration of the required open bag;

(c) guide means for guiding an unwinding web in a guide path extending along said first support face, around said bottom support face and back along said second support face with the side wall forming portions of the web projecting outwardly from said oppositely disposed side support faces and opposite ends of said bottom support face;

(d) drive means associated with said former for driving an unwinding web along said guide path;

(e) folding means at opposite sides of said former mounted for movement to engage said side wall forming portions and fold said side wall forming portions about said former into and overlapping relationship in which the sides may be sealed to close opposite sides of the U-shaped web to form an open bag at one end of the web;

(f) means on said frame for severing a bag length from the web; and

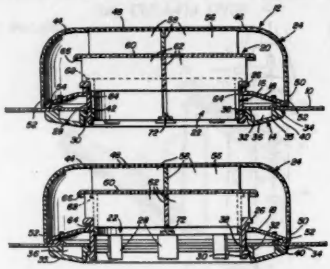
(g) discharge means for engaging a bag formed on said former and discharging it from said machine in an open configuration.

4,184,414

FLEXIBLE COVER VENT

Frank R. Jarnot, Huntington, Conn., assignor to Airlette Corporation, Pekin, Ind.

Filed Feb. 8, 1978, Ser. No. 876,039
Int. Cl.[2] F24F 7/00
U.S. Cl. 98—37 12 Claims



1. A vent for a panel, said vent comprising first and second members, said members defining central registered openings formed therethrough and being adapted to oppose the inner and outer surfaces of a panel having a vent opening formed therethrough of a size and shape complementary to and registered with said registered openings, connecting means connected between said members securing the latter together for frictionally gripping said panel therebetween, said connecting means defining a tubular member having first and second ends from which said first and second members are supported, a cup-shaped cover having closed and open ends and supported from said first member in position loosely embracing said first end of a said tubular member, a transverse baffle supported within said cover spaced between said closed end and said first end of said tubular member and a sleeve member telescoped within said tubular member and longitudinally shiftable therein between extended and retracted positions relative to said first end of said tubular member for displacement toward and away from, respectively, a position abutted against the side of said baffle opposing said first end of said tubular member, said closed end of said cover having air passage openings formed therethrough registered with said baffle.

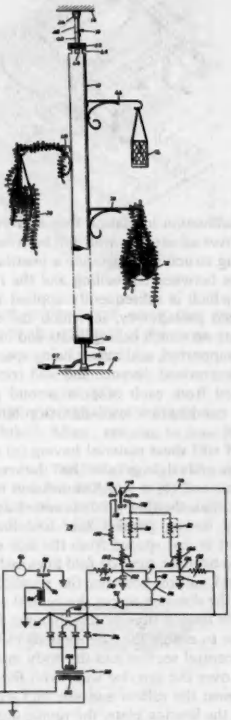
10. A vent for a panel having an opening formed therethrough, said vent including a tubular member for lengthwise disposition through said opening and having first and second opposite ends, said tubular member including a radially outwardly projecting circumferential flange supported from said first end and adapted to bear and seal against one side of said panel about said opening, a peripherally closed cup-shaped cover including a closed outer end and an open inner end, said cover being supported from said flange with the open inner end of said cover engaged with the outer periphery of said flange and the inner surface of the closed outer end of said cover opposing said flange and spaced axially from said first end of said tubular member, said closed outer end being defined by an end wall aligned with and disposed generally normal to said tubular member, said end wall having air passage openings formed therethrough, a baffle mounted in said cover between and in spaced juxtaposition relation to the inner surface of said end wall and said first end of said tubular member, a vent closing sleeve telescoped within said tubular member and longitudinally shiftable relative thereto between extended and retracted closed and open positions relative to said tubular member first end with the end of said sleeve corresponding to said first end of said tubular member engaged with and retracted away from, respectively, the side of said baffle opposing said first end of said tubular member.

4,184,415

AIR CIRCULATION APPARATUS

Dick H. Nicholson, Gas City, Ind., assignor to General Connector Corporation, Markle, Ind.

Filed Jul. 14, 1978, Ser. No. 924,498
Int. Cl.[2] F24F 7/06
U.S. Cl. 98—33 A 8 Claims



1. Air circulation apparatus comprising:

an elongated tubular member having opposite ends with an air inlet opening in one end and an air outlet opening in the other end thereof, said member having a longitudinal axis,

a floor pole secured to said tubular member at said one end thereof, said pole having a distal end to which is attached a resilient cap adapted frictionally to engage a flat surface,

a ceiling pole secured to said tubular member at said other end thereof, said ceiling pole having a distal end to which is attached a second resilient cap adapted frictionally to engage a flat surface,

at least one of said poles being extensibly connected to said tubular member for rectilinear movement along a direction generally collinear with the longitudinal axis of said tubular member, means for forcibly extending said one pole along said direction, whereby said apparatus may be frictionally supported in a vertical position between the floor and ceiling of a room,

blower means mounted within said tubular member adjacent said inlet opening for drawing air in said inlet opening and forcing it out said outlet opening, and

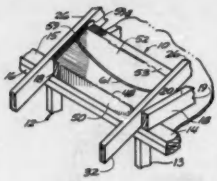
an air deflector at said other end of said tubular member directed toward said outlet opening.

4,184,416

COMBINATION THERMAL INSULATION STOP AND VENTILATION BAFFLE ARTICLE

Bryce L. Koontz, 125 Oklahoma, Anchorage, Ak. 99504

Filed May 30, 1978, Ser. No. 910,602
Int. Cl.[2] F24F *7/00*
U.S. Cl. 98—37 **4 Claims**



1. A combination insulation stop and ventilation baffle for mounting over an exterior wall and between a roof and ceiling of a building structure to provide a ventilation passageway to an air space between the ceiling and the roof and to prevent insulation which is subsequently applied to the ceiling from clogging said passageway, in which the exterior wall has a bearing plate on which ceiling joists and inclined parallel roof rafters are supported, said rafters being spaced from each other a first predetermined distance and said roof and bearing plate being spaced from each other a second predetermined distance, said combination insulation stop and ventilation baffle comprising:

a body of stiff sheet material having (a) a length dimension between end edges greater than the second predetermined distance, and (b) a width dimension between side edges greater than the first predetermined distance;

said body having parallel side fold lines formed therein adjacent to and spaced from the side edges defining side sections between the side fold lines and the side edges and a central section between the parallel side fold lines in which the distance across the central section between the side fold lines is slightly less than the first predetermined distance to enable the side sections to be pivoted relative to the central section and the body inserted between two rafters over the exterior wall, with the side sections bearing against the rafters and one end edge operatively engaging the bearing plate, the remaining end edge projecting into the air space to define a ventilation passageway;

an elongated rod of a length dimension greater than said first predetermined distance extending across the width of said body and having opposite ends projecting through said side sections;

clamp members receivable on the rod ends and selectively positionable thereon for engaging the side section to hold them in a selected angular relationship to the central body section.

4,184,417

PLUME ELIMINATION MECHANISM

Richard A. Chancellor, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

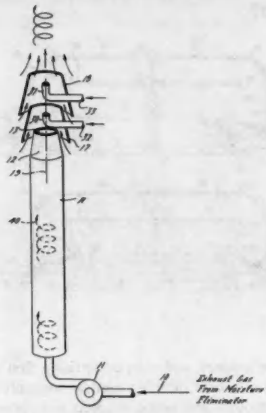
Filed Dec. 2, 1977, Ser. No. 856,698
Int. Cl.[2] F23L *17/02;* F23J *13/00*
U.S. Cl. 98—58 **6 Claims**

1. A discharge apparatus for hot exhaust gases, comprising:

(a) a discharge stack with a vertically oriented duct having an open end at the top thereof,

(b) a plurality of conical diffusing members supported adjacent the open end and concentric about the axis of said duct, said diffusing members being spaced longitudinally apart a distance along said axis, each of said diffusing members beong open at opposite ends thereof with the upper end of each member being nested within but spaced from the lower end of the most adjacent conical member, and

(c) means providing for injection of a continuous jet of compressed air into each of said diffusing members, said jets being aligned with the axis of the associated diffusing



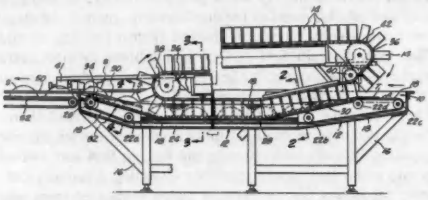
member whereby the flow of exhaust gases exiting from said open stack top is cooled by said jets, diluted by the ambient air aspirated into and between said conical members and dispersed homogenously into the general mass of the atmosphere without the formation of a visible plume.

4,184,418

APPARATUS FOR PREPARING TACO SHELLS

James A. Jimenez, Temple City, Calif., assignor to Electra Food Machinery, Inc., El Monte, Calif.

Filed Jul. 7, 1978, Ser. No. 922,652
Int. Cl.[2] A47J *37/12*
U.S. Cl. 99—353 **6 Claims**



1. An apparatus for preparing taco shells from uncooked tortillas comprising:

(a) a cooking vessel for containing cooking oil, said vessel including guide surfaces positioned within said vessel, said guide surfaces varying transitionally in cross-section from a first substantially planar configuration into a shallow V-shaped configuration, then into a second generally steep V-shaped configuration and finally into a third substantially planar configuration;

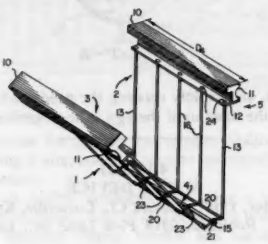
(b) a first conveyor means comprising a flexible endless mesh belt adapted to slidably engage said guide surfaces for moving the tortillas through said cooking vessel;

(c) mold means adapted to cooperate with said first conveyor means to encapsulate the tortilla between said first conveyor means and said mold means whereby the tortilla is shaped between said first conveyor means and said mold means as said first conveyor means is formed into a substantially V-shape by said guide surfaces; and

(d) guide means adapted to engage the cooked taco shell and

to cooperate with said first conveyor means to remove the taco shell from said cooking vessel.

4,184,419
TOASTER ACCESSORY
Raymon Ponte, 16516 Kipling Rd., Rockville, Md. 20855
Filed Dec. 11, 1978, Ser. No. 968,420
Int. Cl.[2] A47J *37/08*
U.S. Cl. 99—402 **11 Claims**



1. An accessory for holding bread, muffins and similar food articles during the toasting process in a conventional pop-up toaster, said accessory comprising:

(a) two complementary and opposed sections which are mirror images connected to one another at a lower end thereof, each of said complementary sections including:

(1) a handle located on top of said section;

(2) means for supporting said handle, said supporting means being positioned directly underneath said handle; and

(3) means connecting the supporting means to the hinge, said connecting means including means for gripping said hinge without gripping any part of the other section; and

(b) a hinge connecting said two sections to each other, said hinge being inserted within the gripping means of each of the sections so that when said sections are hinged in a closed and upright position, said handles, said connecting means and said hinge means form a carrier with only a top, a bottom and two sides, thereby permitting the article of food being toasted to be withdrawn from the accessory from between said two sides.

4,184,420
BARBECUE OVEN
William N. Podaras, and Joseph M. Berta, both of Gastonia, N.C., assignors to The Tabernacle of God, Inc., Gastonia, N.C.
Filed Aug. 30, 1978, Ser. No. 938,032
Int. Cl.[2] A47J *27/00*
U.S. Cl. 99—427 **24 Claims**

1. A barbecue oven comprising:

(a) a combustion chamber;

(b) means for supporting combustion within said combustion chamber;

(c) a cooking oven above the combustion chamber;

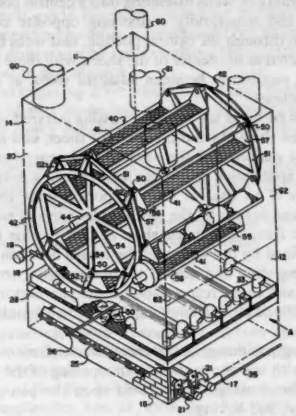
(d) a rotatable meat holder movable in a circular path within said cooking oven,

(e) means for rotating the meat holder during cooking of the meat;

(f) a fire shield between the combustion chamber and the cooking oven, said fire shield comprising at least one water compartment on its upper surface, means for selectively introducing fluid into each compartment,

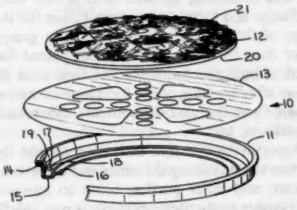
(g) means for selectively draining fluid from each compartment, and

(h) duct means extending through the fire shield and providing communication between the combustion chamber and the cooking oven, whereby heat is transmitted directly from the combustion chamber to the cooking oven



through the duct means while water may be boiled to impart moisture to the contents of the oven.

4,184,421
FOIL SHEET FOR COOKING AN ITEM OF FOOD
David W. Ahlgren, Duluth, Minn., assignor to Jeno F. Paulucci, Duluth, Minn.
Continuation of Ser. No. 766,311, Feb. 7, 1977, abandoned, which is a division of Ser. No. 687,926, May 19, 1976, Pat. No. 4,065,583. This application Jul. 10, 1978, Ser. No. 922,901
Int. Cl.[2] A47J *37/01*
U.S. Cl. 99—450 **1 Claim**



1. A disposable, flexible food supporting one-time usage cooking sheet and pan liner for use with an item of food in a radiant infrared-heat food oven, in combination with a substantially open-bottomed rigid and reuseable concave and annular pan, said pan having:

(a) a downward facing annular bottom by which the pan may be supported,

(b) an upward facing annular support surface within the pan with an inner edge of the support surface defining and sizing the opening in and through the bottom of the pan, and

(c) a peripheral flange extending upward at a constant height from and around the annular support surface and on and around the outside of the pan for positioning the sheet together with an item of food placed upon the sheet within the pan and on the annular support surface;

said cooking sheet and pan liner comprising an integral one-piece sheet of flat, flexible, soft aluminum wrapping foil having a thickness of about 0.001 inch (0.03 mm), said sheet having:

(a) an imperforate annular closed loop initially flat margin

extending completely around and forming the periphery of the sheet;

(b) a plurality of webs extending into a central portion of the sheet and structurally connecting opposite sides of the margin through the central portion, said webs being interconnected at the center of the sheet, with there being fillet radius sections in between adjacent webs, at such interconnections;

(c) means between the webs for passing infrared radiant heat between the webs and through the sheet, said means covering a majority of the area of said central portion for direct application of radiant heat against a portion of the bottom of an item of food supported upon the cooking sheet and in turn by the pan annular support surface during use thereof, with the sheet central portion being

(1) defined by the webs and the means between the webs,

(2) being sized and shaped to substantially correspond in size and shape respectively to the pan bottom opening as defined by said inner edge of the pan annular support surface,

(3) being positioned in the sheet to complementally register with and above the bottom opening of the pan when the sheet margin is centered upon the pan peripheral flange, and having

(4) fillet radius sections joining the webs to the margin, said radius sections being generally tangent to the bottom opening of the pan when the sheet is within the pan;

(d) an inner annular surface portion in the margin and sized to fit upon and cover and line said pan annular support, for supporting an item of food on said pan annular support surface without actual contact thereagainst by the food;

(e) an outer annular surface portion in the margin and initially co-planar with and extending completely around the inner annular surface portion, said outer portion being larger than the pan and upwardly formable about an item of food atop of the inner portion and the webs, upon in-situ manual insertion of the sheet and the item of food thereon into the pan, said outer portion after being formed upwardly comprising a continuous flange around the food item and extending upward from within the pan peripheral flange and forming an interior liner for the peripheral flange of the pan and also a manually graspable handle higher than the top of the pan peripheral flange, for removal of both the foil sheet and food item thereon from the pan after cooking of the food item in the pan and while the pan, food item and sheet are at a substantially elevated temperature; and

(f) an imperforate fold line extending around the margin in between and adjoining the inner and outer annular surface portions, said outer portion being so upwardly foldable with respect to the inner portion across this fold line.

4,184,422

MIXING MATERIAL IN SEALED CONTAINERS

Frederick G. J. Grisé, 87 Main St., Osterville, Mass. 02655, and Walter Lovell, 348 Mountain Rd., Wilbraham, Mass. 01095

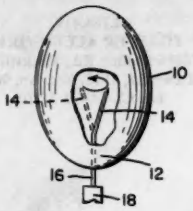
Continuation-in-part of Ser. No. 677,450, May 15, 1976, abandoned, which is a division of Ser. No. 183,118, Sep. 23, 1971, abandoned. This application Nov. 13, 1978, Ser. No. 959,484

Int. Cl.[2] H23L *1/32*; B01F *7/16*

U.S. Cl. 99—485 **3 Claims**

1. The method of homogenizing an avian egg having an ovoid shape with a larger endand a smaller end, there being an air cell in the larger end, said egg having an interior membrane under the shell, said membrane encompassing the fluid content of the egg, and failing to enter the air cell,

the step of piercing a wall of the egg shell and the membrane by means of a single bent needle, by holding the egg in one hand of the user, said egg being partly exposed, the remainder of the egg being toward the palm of the hand, and pressing the egg down against the point of the needle held upright with its point up, and sliding the egg down on the needle all the way to the end of the needle so that the entire needle is within the egg and at least partially within



the yolk, and rapidly rotating the needle while the egg is held in the hand until the egg is homogenized.

4,184,423

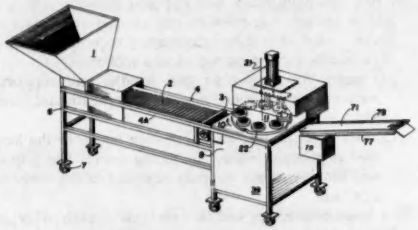
SLICER DEVICE

Glenn F. Raque, 11107 Ainwick Ct., Louisville, Ky. 40243, and Edward A. Robinson, 8914 Pine Lake Dr., Louisville, Ky. 40220

Filed Sep. 7, 1978, Ser. No. 940,258

Int. Cl.[2] A23P *1/00*; A23N *15/00*; B26D *3/24*

U.S. Cl. 99—537 **8 Claims**



1. A cutting device for cutting generally round objects into sections including:

(a) a generally circular rotatable table, at least one first aperture means having a diameter greater than the diameter of the objects located within the periphery of said table and extending therethrough where the center of each first aperture lies on a circle concentric with said table and a radius less than the radius of said table;

(b) object receiving stations located on the upper surface of said table where an object receiving station is provided over each aperture and includes deformable support means to permit the object to be sectioned to pass through the deformable support means and the respective table aperture;

(c) extensible-retractible pusher means located above said table and disposed to be extended through at least one of said deformable support means of one of said receiving stations;

(d) cutter means having at least one blade located in aligned relation with said pusher means whereby an object to be sectioned is pushed through said deformable support means and said cutter means by said pusher means; and

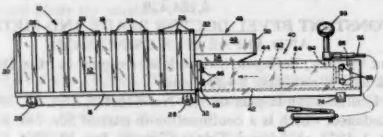
(e) indexing drive means adapted to rotate said table from a first position where the objects to be sectioned are placed on one of said receiving stations to a second position where said object rests on said receiving station in aligned relation between said cutter means and said pusher means, actuate said pusher means to push said object through said support means and said cutter means and retract said pusher means while said table is in said second position, then rotate said table to align other receiving station means between said pusher means and said cutter means.

4,184,424

WASTE MATERIAL TESTING APPARATUS

David M. Yeager, Toledo, Ohio, and Hans T. Thumm, Temperance, Mich., assignors to Browning-Ferris Industries of Ohio and Michigan, Inc., Toledo, Ohio

Filed Apr. 27, 1978, Ser. No. 900,345
Int. Cl.² B30B *1/32*
U.S. Cl. 100—99 2 Claims



1. An apparatus for testing the compressibility of waste materials varying in size, material content and density comprising, in combination,

a portable six walled container simulating a commercial compactor container, one of said container walls having a charging aperture formed therein and another of said container walls having at least a portion of the wall formed of transparent materials, the transparent material extending from substantially adjacent the charging aperture to the wall opposed to said wall having the charging aperture formed therein;

a compactor unit including an open bottom hopper communicating with the top portions of a compression chamber, said compression chamber having one end connected to said aperture in the one wall of the container;

a ram unit reciprocal in said compression chamber to move waste material deposited in said hopper into the interior of said container;

fluid pressure means for advancing said ram unit towards said container, said fluid pressure means including a manually operable pressure generator; and

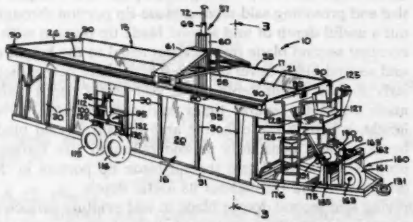
means for indicating the pressure developed by said manually operable pressure generating means, whereby the compressibility characteristics of a selected lot of waste material may be determined by concurrently observing the degree of compaction of the waste material in said container and the maximum pressure required to establish the observed degree of compaction.

4,184,425

SELF-PROPELLED MODULE BUILDER

Donald J. Haney, San Jose, and Franklin P. Orlando, Morgan Hill, both of Calif., assignors to Cotton Machinery Company, Inc., Livermore, Calif.

Filed Jan. 10, 1979, Ser. No. 2,320
Int. Cl.² B30B *1/32, 15/32*
U.S. Cl. 100—100 12 Claims



1. A self-propelled module builder comprising:

(a) a bin in which material is deposited having side walls;

(b) a tamping mechanism on said bin for compressing material deposited in said bin for forming a module;

(c) a walking beam mounted on each of said side walls;

(d) a depending member pivotally attached to each end portion of each walking beam;

(e) a vertical guide for each depending member whereby each depending member is constrained for movement in a vertical direction while each walking beam is freely pivotable at each end thereof;

(f) a ground engaging drive wheel mounted on the lower end of each of said depending members for rotation;

(g) a drive motor mounted on each of said depending members;

(h) drive means interconnecting each drive motor with its adjacent ground engaging drive wheel for imparting rotation thereto; and

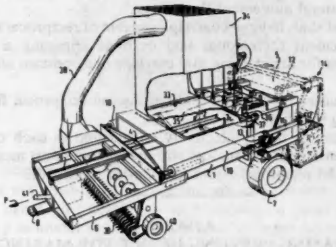
(i) means connected to said drive motors for operating said drive motors to propel the module builder.

4,184,426

BALING DEVICE FOR AGRICULTURAL CROPS

Pieter A. Oosterling, Nieuw-Vennep, and Adriaan Van Zweeden, Rijsenhout, both of Netherlands, assignors to Expert N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 848,525, Nov. 4, 1977, abandoned. This application Jan. 31, 1979, Ser. No. 7,998
Claims priority, application Netherlands, May 11, 1976, 7612345; May 13, 1977, 7705350
Int. Cl.² B30B *15/32*
U.S. Cl. 100—100 18 Claims



18. A mobile baler device for compressing agricultural crop comprising in combination:

a mobile frame adapted to travel over a field and including a compression chamber having an inlet for filling same with crop and a pivotal end portion being selectively operable between opened and closed positions to define an outlet port;

a compressing ram adapted to reciprocate longitudinally within said compression chamber toward and away from said pivotal end portion;

feed means for conveying crop through said inlet into said compression chamber when said ram is disposed away from said pivotal end portion; and

drive means connecting said ram to said end portion of the compression chamber for compressing crop therebetween, said drive means comprising a pair of hydraulic piston/cylinders extending longitudinally on opposite sides of said compression chamber and externally thereof.

4,184,427

MULTI-PURPOSE SCREEN PRINTING MACHINE FOR FLAT OR CURVED SURFACES

Henry J. Bubley, Deerfield; Louis A. Lala, Skokie, and Hillman W. Taylor, Park Forest, all of Ill., assignors to American Screen Printing Equipment Co., Chicago, Ill.

Filed Aug. 26, 1977, Ser. No. 827,738
Int. Cl.² B41F *15/14, 15/36*
U.S. Cl. 101—123 4 Claims

1. A machine for the printing of both curvilinear and flat

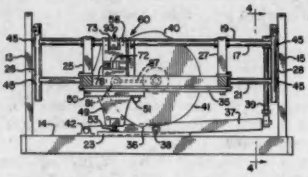
objects, having two spaced end supports, a first shaft pivotally mounted between said end supports,

at least two spaced rocker arms mounted on said first shaft,

a roller at the end of each rocker arm,

vertical linkage rods having a slot at upper ends thereof, each of said rollers being captivated within one of said slots for limited movement therein, said linkage arms traveling in a vertical path formed on each of said end supports and thereby being guided for substantially vertical movement on the pivotal movement of said rocker arms,

at least two shafts mounted between each vertical linkage rod in parallel at spaced points thereon for following vertical movement,



said parallel shafts forming a screen support means for selective vertical or lateral movement of an associated screen assembly,

a squeegee support means engages with said parallel shafts for lateral movement therealong,

said first shaft having a carriage capable of reciprocal sliding movement therealong, said carriage engaging a guide means for maintaining said carriage in a constant attitude, and

drive means for moving said carriage in reciprocal fashion along said first shaft,

said carriage being selectively engageable to each of said screen support means and said squeegee support means for parallel reciprocal lateral movement therewith.

4,184,428

PERFORATING-PRINTING DEVICE FOR MAKING AND USING THERMAL STENCILS

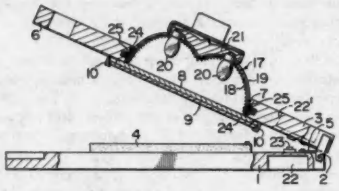
Tadamichi Hosoya, Chiba, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Aug. 12, 1977, Ser. No. 824,215

Claims priority, application Japan, Aug. 26, 1976, 51/114253

Int. Cl.[2] B41F *15/20*; B41N *1/24*; B41C *1/14*

U.S. Cl. 101—128.4 **18 Claims**



1. A perforating-printing device using thermal stencils, comprising:

a base plate having a cushion plate for placing originals or printing sheets thereon;

a press plate, pivotally mounted to said base plate, having a transparent rigid flat plate located so as to face said cushion plate when said press plate is pivoted down against said base plate to permit light access during cutting of said stencil and viewing during printing;

means supported by said press plate for holding a framed thermal stencil at said press plate against said rigid plate so that, when said press plate is pivoted down against said base plate, said transparent rigid plate exerts substantially uniform pressure on said stencil over substantially its entire surface; and

a light source unit removably mounted to said press plate as opposing said transparent rigid plate so as to be able to radiate flash light to said thermal stencil.

4,184,429

CONSTANT BEVEL DOCTOR BLADE AND METHOD AND APPARATUS USING SAME

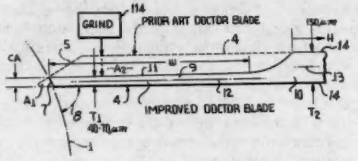
Max Widmer, Zofingen, Switzerland, assignor to Max Datwyler & Co., Bleienbach, Switzerland

Continuation-in-part of Ser. No. 514,485, Oct. 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 329,070, Feb. 2, 1973, abandoned. This application Jan. 29, 1976, Ser. No. 653,429

Claims priority, application Switzerland, Feb. 9, 1972, 1831/72

Int. Cl.[2] B41F *9/10*

U.S. Cl. 101—169 **37 Claims**



1. In a printing method of a type wherein excess ink is wiped from the printing surface of a printing form with a doctor blade having conventionally a given constant blade thickness between two mutually parallel blade surfaces and a generally wedge-shaped tip portion including a run-in blade bevel having an optimum tonal quality size and extending from one of said blade surfaces at an angle corresponding to an angle of attack of the doctor blade relative to said printing surface, and an inclined wedge surface extending from said blade bevel to the other of said blade surfaces, whereby the effective area of said blade bevel would increase from said optimum size through progressive wear of said tip portion during use of said blade to sizes eventuating in progressive degradation of print quality, the improvement comprising in combination the steps of:

preparing a second doctor blade for use in lieu of said conventional doctor blade by providing a doctor blade blank having said blade thickness between said parallel blade surfaces, shaping a marginal portion of said blank into a second blade tip portion, providing said second blade tip portion with a second blade bevel essentially identical to said run-in blade bevel having said optimum tonal quality size and providing said second blade tip portion throughout a useful depth of said second blade tip portion with a constant second blade tip thickness equal to the height of said second blade bevel measured essentially perpendicularly to said useful depth, with said useful depth being made equal to several times said second blade bevel height, whereby the effective area of said second blade bevel remains constantly at said optimum size through progressive wear of said second blade tip portion in the direction of and throughout its useful depth;

applying said second doctor blade to said printing surface at an angle essentially equal to said angle of attack, with said second blade bevel being in contact with said printing form;

applying said ink to said printing surface and printing form;

effecting relative movement between said printing form and second doctor blade whereby said second blade tip por-

tion is caused to wipe excess ink from the printing surface at said optimum size second blade bevel; and

continuing said excess ink wiping by continuing said relative movement and advancing said second doctor blade toward said printing form to compensate for wear of said second blade tip portion and to maintain said second doctor blade continuously in contact with said printing form via a second blade bevel maintaining continuously said optimum size throughout said useful depth of said second blade tip portion.

4,184,430

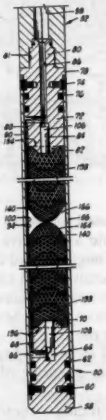
METHOD AND APPARATUS FOR SEVERING TUBING

Wayne E. Mock, Arlington, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Filed Jun. 29, 1977, Ser. No. 811,424

Int. Cl.[2] F42B *3/00*

U.S. Cl. 102—24 R **30 Claims**



1. A drill collar cutter apparatus for severing a drill collar in a downhole environment consisting essentially of:

an elongated tubular housing;

lowering means connected to one end of said housing for lowering said housing in a drill string;

first explosive charge means in said housing said first explosive charge means having a first end and a generally convex second end;

second explosive charge means in said housing in axial alignment with said first explosive charge means said second explosive charge means having a first end and a generally convex second end said first and said second explosive charge means being positioned within said tubular housing means such that the generally convex second ends of

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4,184,431

TRACK LAYING TRAIN

Pierre Goel, Lausanne, Switzerland, assignor to Canron, Inc., Toronto, Canada

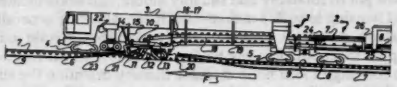
Filed Jul. 27, 1977, Ser. No. 819,390

Claims priority, application Switzerland, Jul. 27, 1976, 9560/76

Int. Cl.[2] E01B *29/05*

U.S. Cl. 104—2 **5 Claims**

1. A railroad track construction and replacement car for railroad track construction train, said car having a longitudinally extending main frame; a rolling support means for engaging railway track at either end of said frame; and, between said rolling support means, means for spreading the old rails apart; means for closing new rails previously laid on the ballast; a support frame, means connected to said support frame for levelling railway ballast; means connected to said support frame for laying new ties one after the other; an auxiliary frame connected to said support frame, means for removing old ties one after the other connected to said auxiliary frame; a steer-



able supplementary retractable off-track undercarriage between the leading rolling support means and and the old tie removing means; and means for retracting the auxiliary frame out of operative position independently of the new tie laying means.

4,184,432

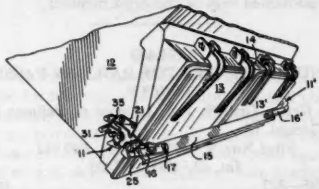
HOPPER CAR DOOR LOCK MECHANISM

Franklin P. Adler, Michigan City, Ind., assignor to Illinois Railway Equipment Company, Chicago, Ill.

Filed Nov. 9, 1977, Ser. No. 849,755

Int. Cl.[2] B61D *7/02, 7/18, 49/06*; E05B *65/14*

U.S. Cl. 105—248 **11 Claims**



1. A hopper door lock mechanism comprising: a housing securely mounted to an outside hopper sheet; a laterally projecting pivot pin carried by said housing; a pawl member pivotally mounted on said pin; a hook member having a slot through which said pin projects, said hook member being pivotally and slidably mounted by said pivot pin along a slope on said outside hopper sheet and onto said housing through said slot; said housing having an inside shelf for restraining the pivoting of said hook member, thereby orienting the slope direction; said pawl member being pivotally mounted by said pivot pin onto said housing; said hook member having a hook formation on one end; said slot of the hook member having an upper end and a lower end; said hook member being positioned down said slope when said pivot pin engages said upper end of said slot; and said hook member being positioned up said slope when said pivot pin engages said lower end of said slot.

7. In combination with a multiple door railway car hopper chute of the type wherein the multiple doors are joined by a spreader bar having a spreader extension member for operative interconnection with a hook member of a hopper door lock mechanism, said hook member being pivotable, and wherein said lock mechanism includes a pivot pin, a housing mounted onto an outside hopper sheet, and a pivotable latch, the improvement which comprises said hook member having a slot through which it is both pivotally and slidably mounted along a slope onto said housing; said housing having an inside shelf for restraining the pivoting of said hook member, thereby orienting the slope direction; a pawl member pivotally mounted with said hook member onto said housing; said slot of the hook member having an upper end and a lower end; said hook member being down said slope when said pivot pin engages said upper end of said slot; and said hook member being up said slope when said pivot pin engages said lower end of said slot.

11. Lock mechanism for a door to a hopper outlet, which door is hinged from above the outlet, comprising: a housing

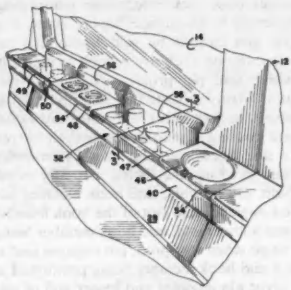
mountable on an outside hopper sheet, a pivot pin and a pivot rivet both projecting generally transversely from said housing, a hook member having a slot, a single hooking recess, an outwardly positioned stop, an inwardly positioned stop and a hook extension, said slot of the hook member engaging said pivot pin to rotatably and slidably mount said hook member to said housing in such a manner that it can slide to a generally up position and to a generally down position on said outside hopper sheet, said housing having an inside shelf for restraining the rotating of said hook member thereby orienting the sliding to the generally up position and to the generally down position, a spreader extension securely fastened to a hopper door for operatively connecting said hook member to the hopper door, a pawl member rotatably mounted to said housing through said pivot pin, said pawl member having a free end and a stop engaging means thereat, said stop engaging means abutting against said outwardly positioned stop of said hook member when said hook member is in said generally down position and said stop engaging means abutting against said inwardly positioned stop of said hook member when said hook member is in said generally up position, a latch pivotally mounted to said housing through said pivot rivet, said latch having a projection so that when said latch is pivoted said projection can engage both said hook member under its hook extension and also said free end of said pawl member when said stop engaging means of said pawl member abuts against said inwardly positioned stop of said hook member.

4,184,433

CONVENIENCE CENTER FOR RAILWAY PASSENGER VEHICLE

Daniel R. Green, Griffith, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Nov. 9, 1977, Ser. No. 849,911
Int. Cl.[2] B61D *37/00*
U.S. Cl. 105—327 **10 Claims**



1. In a railway passenger vehicle having a side wall unit with a number of windows contained therein, a passenger convenience center comprising:

said side wall unit including an adapter bracket inwardly upstanding therefrom having a generally horizontal ledge portion and a connector surface extending generally downwardly from said ledge portion;

a mounting shell means for providing a lower hollow portion and said shell means having upstanding leg means providing spaced walls;

implement support means adapted to be removably attached to the mounting shell means to provide a support surface for glasses, bottles and the like;

said upstanding legs of the mounting shell means having means for connecting the implement support means to said shell means to provide a tight, fluid-resistant seal between the mounting shell means and the implement support means;

connector means extending between the mounting shell means and the adapter bracket and providing a connection between same;

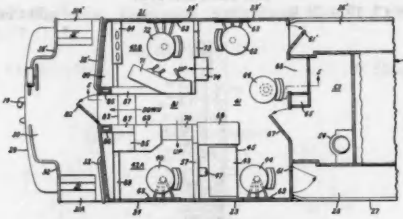
said mounting shell means having means cooperative with the ledge portion of the adapter bracket for providing resting and connecting contact between the mounting shell means and the adapter bracket.

4,184,434

LOCOMOTIVE WITH LARGE CREW CAB

James R. Chapin, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Continuation-in-part of Ser. No. 673,497, Apr. 5, 1976, abandoned. This application Aug. 5, 1977, Ser. No. 822,169
Int. Cl.[2] B61D *17/10, 33/00*
U.S. Cl. 105—456 **16 Claims**



1. A locomotive adapted to propel a train of railroad cars along a surface track, said locomotive having at least one cab for accommodating the engineer and at least two members of the train crew and, adjacent to said cab, a hood for enclosing a power unit of the locomotive, wherein said cab comprises:

(a) upper and lower sections which are respectively located at different elevations in the cab;

(b) a region between said sections through which said engineer and crew members can conveniently pass from one to the other of said sections;

(c) said upper section including a control panel for controlling operation of said power unit and seating space for the engineer adjacent to said control panel with visibility both to the front and to the rear with respect to the direction the locomotive moves along said track, the line of sight of the engineer, when looking in the direction of said hood, extending alongside of said hood and being generally parallel to the sides of the railroad cars being propelled by the locomotive;

(d) said lower section including seating space for a first one of said crew members with visibility along a line of sight that extends alongside of said hood and that is generally parallel to the sides of the railroad cars being propelled by the locomotive; and

(e) said cab being wider than said hood so that the lines of sight of said engineer and first crew member are not obstructed by the sides of said hood.

4,184,435

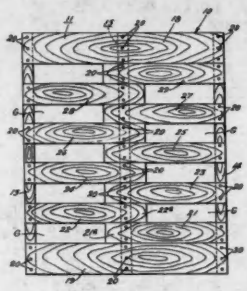
INDUSTRIAL PALLETS AND METHOD OF MANUFACTURING

Richard Shevchenko, Medical Bldg., North Deerfield Pike, Bridgeton, N.J. 08302

Filed Aug. 7, 1978, Ser. No. 931,923
Int. Cl.[2] B65D *19/26*
U.S. Cl. 108—57.1 **18 Claims**

1. In a pallet assembly, including a top deck, a bottom deck, outboard stringer means interposed between said decks to provide a space between said decks, and intermediate stringer means disposed between said outboard stringer means to divide the space between the decks into entryways for a forklift, the improvement wherein at least one of said decks comprises a plurality of deckboards of relative long and short lengths, a pair of said long deckboards extending the full distance across

said stringer means at opposite ends thereof, said short deckboards being disposed between said long deckboards and extending less than the full distance across said outboard stringer means but greater than the distance between the outboard stringer means and said intermediate stringer means, said short deckboards being arranged on said stringer means so that they



extend inwardly from opposite outboard stringer means and have free end portions cantilevered in opposite directions across said intermediate stringer means and interdigitate with one another in the zone of said intermediate stringer means, and means fastening said deckboards to said stringer means to form a unitary pellet structure.

4,184,436

CHIP-FIRING UNIT

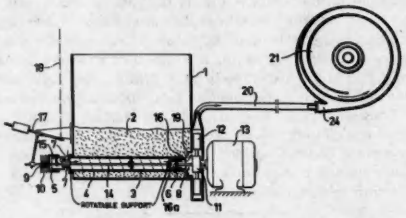
Roland Palm, 346 Mobodarne, and Sven Palm, 16 Krongatan, both of S-826 00 Soderhamn, Sweden

Continuation-in-part of Ser. No. 713,279, Aug. 10, 1976, abandoned. This application Apr. 28, 1978, Ser. No. 901,312

Claims priority, application Sweden, Aug. 14, 1975, 7509105

Int. Cl.[2] F23K *3/02*

U.S. Cl. 110—102 **4 Claims**



1. A chip-firing unit comprising a burner, a container for chips, a fan with an inlet located adjacent to said container, a drive connected to said fan, a conduit, a conveyor for transportation of chips from the container to the inlet of said fan for further transportation via, said conduit to said burner, said conveyor comprising a pipe with external thread means, and being rotatably arranged and directly coupled to the fan drive, chips being continuously fed to the inlet of said fan during rotation of said pipe, the interior of said pipe communicating with the ambivalent air through an inlet to the pipe, a first throttle for controlling the air through the inlet to said pipe, a second throttle and a regulating rod for controlling the chip supply to the burner, said first throttle cooperating via said regulating rod with said second throttle.

4,184,437

FURNACE FOR WASTE MATERIAL

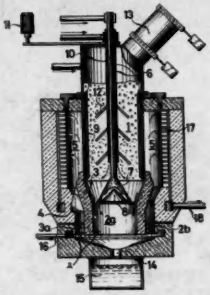
Heinz Mallek, and Werner Jablonski, both of Linnich, Tetz, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Julich, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,516

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1977, 2735107

Int. Cl.[2] F23G *5/12*

U.S. Cl. 110—251 **3 Claims**



1. A furnace for waste material, which includes in combination: a chute for receiving said waste material, said chute having an open end; a combustion chamber arranged below said lower end and provided with a closable bottom for slag collection; a furnace muffle extending from said lower open end of said chute to said combustion chamber; first conduit means connectable to a source of fresh air and forming a constriction with said furnace muffle, said first conduit means leading to said constriction; second conduit means being connectable to a source of fresh air and being arranged in said chute and ending in said chute above said constriction for supplying fresh air thereto; flue means surrounding said chute and communicating with said combustion chamber for releasing flue gases therefrom; means arranged in said chute for aiding the movement of said waste material through said chute; a guide arrangement in the form of an intermediate wall formed from that portion of said furnace muffle located below said constriction, said intermediate wall dividing said combustion chamber into a radially inwardly lying step-down flow portion and a radially outwardly lying chamber communicating with said flue means; and third conduit means connectable to a source of fresh air and ending in said outwardly lying chamber.

4,184,438

FLUIDIZED BED START-UP APPARATUS

Richard W. Bryers, Flemington, and Thomas E. Taylor, Bergenfield, both of N.J., assignors to Foster Wheeler Development Corporation, Livingston, N.J.

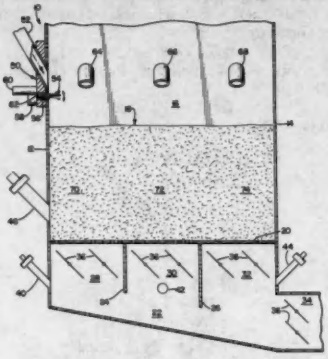
Filed Jan. 5, 1978, Ser. No. 866,985

Int. Cl.[2] F23D *19/02*

U.S. Cl. 110—263 **7 Claims**

1. An apparatus for supporting and starting a fluidized bed, said apparatus comprising a housing, grate means supported in said housing and adapted to receive on its upper surface a bed of particulate material at least a portion of which is combustible, means for dividing the interior of said housing below said grate means into a plurality of compartments, a plurality of air damper means respectively associated with said compartments for selectively controlling the flow of air through each compartment and through the respective portions of said grate means extending over said compartments to selectively fluidize the corresponding portions of said bed of particulate material, a plurality of preheat burners respectively associated with each

of said compartments for preheating the air as it flows through said compartments, burner means extending in said housing for igniting the portion of the combustible portion of said bed of



particulate material extending above one of said compartments, and means extending in said housing for selectively supplying additional combustible particulate material to said portions of said bed of particulate material.

4,184,439

DEVICE FOR FOLDING A STRIP OF MATERIAL

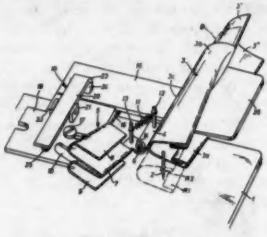
Rudi Schulz, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH

Filed Sep. 18, 1978, Ser. No. 943,354

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 7732141[U]

Int. Cl.[2] D05B *35/06*

U.S. Cl. 112—147 **6 Claims**



1. A device for folding a strip of material, comprising, a support, a substantially U-shape guide having divergent first and second guide legs and mounted on said support and having a widened entrance end for the insertion of the strip of material and a narrow discharge end for the discharge of the material, and being of a tapered funnel form, tapering inwardly from said widened entrance end to said discharge end, a substantially W-shape folding element engageable with said U-shape guide and having a central folding web portion engageable into said guide between said guide legs and a folding leg portion joined to each side of said central web portion adapted to engage over said guide legs, and mounting means movably mounting said folding element on said support adjacent said discharge end of said guide for movement to engage said W-shaped folding element into said guide and to fold inwardly the end of the strip of material between said guide legs.

4,184,440

DEVICE FOR SELECTING LAMINATE CAM FOR SEWING MACHINES

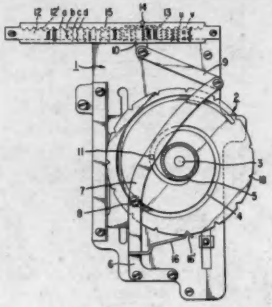
Setsuo Matsumoto, Utsunomiya, Japan, assignor to The Singer Company, New York, N.Y.

Filed Apr. 24, 1978, Ser. No. 899,443

Claims priority, application Japan, Apr. 18, 1977, 52-5543

Int. Cl.[2] D05B *3/02, 3/04*

U.S. Cl. 112—158 A **3 Claims**



1. In a sewing machine having laminate pattern cams and laminate feed cams with which are engaged a zig zag cam follower and a feed cam follower, respectively, to obtain composite patterns, a device for selecting said laminate cams characterized in that a disk cam for pattern cam selection is so installed in a machine housing as to be turned by an operator influenced control dial on the exterior of the sewing machine, a stitch pattern indicator groove, a zig zag pattern cam-selection groove and a feed cam-selection groove are formed on the surfaces of said disk cam, individual followers are provided for tracking each of said grooves whereby one of the laminate pattern cams is selected by that cam follower which tracks said zig zag pattern cam-selection groove, one of the laminate feed cams is simultaneously selected by that cam follower which tracks said feed cam-selection groove, and a stitch pattern indicator is provided which is simultaneously set by that cam follower which tracks said stitch pattern indicator groove, wherein the stitch pattern-indicator groove is formed on the front surface of the disk cam, the zig zag pattern cam-selection groove and feed cam-selection groove are formed on the back surface of said disk cam, and said stitch pattern indicator comprises an operation lever having at its middle part said follower tracking said stitch pattern-indicator groove, said operation lever being pivoted to a mounting plate mounted on the machine housing, a pointer needle carrying member attached to the other end of said pointer needle operation lever via a link, and a pattern board inscribed with representations of stitch patterns attached to the mounting plate and arranged for cooperation with said pointer needle.

4,184,441

ELECTRONICALLY CONTROLLED HOUSEHOLD SEWING MACHINE HAVING PATCH SEWING CAPABILITY

Jack Brown, Union; Donald J. Coughenour, Morristown, and Russell J. Pepe, Piscataway, all of N.J., assignors to The Singer Company, New York, N.Y.

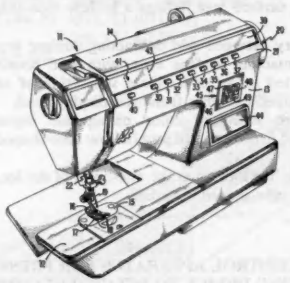
Filed Apr. 19, 1979, Ser. No. 31,677

Int. Cl.[2] D05B *3/02, 3/12, 27/20*

U.S. Cl. 112—158 E **3 Claims**

1. In a sewing machine having stich forming instrumentalities positionally controlled over a predetermined range to produce a pattern of successive feed and bight controlled stitches, said instrumentalities including a needle carrying bar supported for selective lateral jogging movement and for

endwise reciprocatory motion alternately to move a needle carried thereby into and out of engagement with a work material being sewn and including a work material feed system effective to feed a work material at a selected rate in a selected longitudinal direction substantially perpendicular to said lateral jogging movement of said needle carrying bar when said needle is out of engagement with said work material; memory means for storing patten stitch information; signal means operating in timed relation with the sewing machine for recovering selected pattern stitch information from said memory means; feed actuating circuit means including an actuator; bight actuating circuit means including an actuator; said feed and bight actuating circuit means being responsive to said selected feed and bight pattern stitch information, respectively, for positioning said stitch forming instrumentalities to produce a pattern of stitches corresponding to the selected pattern stitch information; means for storing supplemental pattern stitch information for positioning said needle carrying bar when said needle moves into engagement with said work material; and means for applying said supplemental pattern stitch information to said actuator of said bight actuating circuit means while said needle is in engagement with said work material; the improvement comprising means adapted for sewing a substantially closed path pattern of stitches including:



first means for storing pattern stitch information corresponding to forward sewing;

second means for storing pattern stitch information and supplemental pattern switch information corresponding to rightward sewing;

third means for storing pattern stitch information corresponding to reverse sewing;

fourth means for storing pattern stitch information and supplemental pattern stitch information corresponding to leftward sewing; and

stitching direction selection means including first selector switch means for effecting retrieval of information from said first storing means, second selector switch means for effecting retrieval of information from said second storing means, third selector switch means for effecting retrieval of information from said third storing means, and fourth selector switch means for effecting retrieval of information from said fourth storing means, and first, second, third and fourth selector switch means having indica thereon for indicating to an operator the sewing direction effected by operation of the respective selector switch means and said first, second, third and fourth selector switch means being positioned so that said indicia visually simulates said closed path pattern.

4,184,442

BLIND STITCH SEWING MACHINE

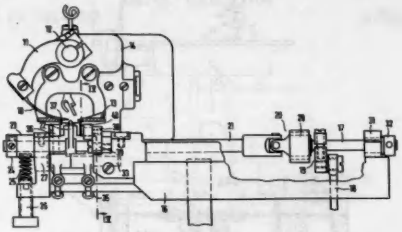
Erwin Maier, Kongen, Fed. Rep. of Germany, assignor to Wilhelm Maier & Sohne, Kongen, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,515

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736780

Int. Cl.[2] D05B *1/24, 9/05*

U.S. Cl. 112—178 **10 Claims**



1. In a blind stitch sewing machine having a curved needle, which is placed in the oscillating head of an upper arm **(14)** and is guided in a stitch plate **(13)**, and a reciprocating plunger element **(22)**, which is arranged in a lower arm **(16)** and having a rocking shaft **(21)** driven oscillatingly and whose position relative to the path of the needle is automatically changeable in dependence upon the thickness of the material to be sewn, the improvement comprising; said rocking shaft **(21)** of the plunger being coupled on its drive side end, by way of a universal joint **(20)**, with a separate auxiliary shaft **(17)** placed and drivable in said lower arm **(16)** and is guided to be vertically adjustable in said lower arm **(16)** at the end on the plunger side, and below said stitch plate **(13)** there is arranged on said lower arm **(16)** a control roller **(40)** which is adjustable to a specifiable distance from said stitch plate **(13)** and can be lowered from this position only if the thus specified thickness of the sewing material is exceeded, and that during this lowering said control roller **(40)** lowers simultaneously also the end of said rocking shaft **(21)** of said plunger **(22)** on said plunger element end.

4,184,443

DIAPHRAGM PUMP FOR NEEDLE THREADING

Jack Brown, Union; John A. Herr, Garwood; Wolfgang Jaffe, Roselle Park, and Wesley R. Peterson, Bound Brook, all of N.J., assignors to The Singer Company, New York, N.Y.

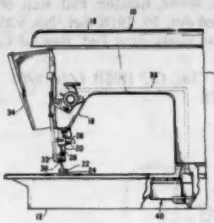
Division of Ser. No. 907,654, May 22, 1978. This application Jan. 17, 1979, Ser. No. 4,118

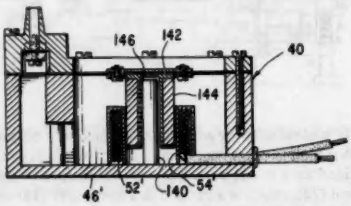
Int. Cl.[2] D05B *87/00*

U.S. Cl. 112—225 **1 Claim**

1. In a sewing machine having a needle bar arranged for reciprocatory motion, a sewing needle, having a thread bearing eye, attached to the end of said needle bar, and a pneumatic needle threader assist, a diaphragm pump housed within said sewing machine for providing an air vacuum to said threader assist, said pump comprising a housing having a recess therein, an elastomeric diaphragm spanning said housing recess defining a pump cavity, inlet and outlet valves communicating with said pump cavity, an electromechanical linear actuator sup-

ported and arranged within said pump cavity and attached to said diaphragm, an electronic control circuit for driving said





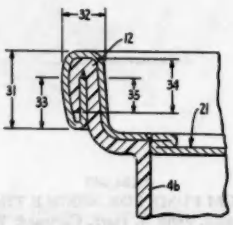
linear actuator, and means for connecting said pneumatic needle threader assist to said inlet valve of said diaphragm pump.

4,184,444

TAPERED PLASTIC CONTAINER WITH SEAMED METAL END AND METHOD FOR MAKING IT

Keith R. Woodley, San Francisco, Calif., assignor to Wescan, Inc., San Francisco, Calif.

Division of Ser. No. 793,732, May 4, 1977, Pat. No. 4,102,467. This application Mar. 16, 1978, Ser. No. 887,174
Int. Cl.² B21D *51/34*
U.S. Cl. 113—120 XY **2 Claims**



1. A method for seaming an easy open metal end upon a plastic container body having a preformed outwardly directed and tapered seaming flange of an initial predetermined radial length, comprising the steps of positioning said body carrying a preformed easy open metal end having a seaming channel and curl overlying said seaming flange in a mold turret below a seaming chuck; lifting said body and metal end upwardly into seaming engagement with said chuck by force applied only to the bottom of the container body; and then seam rolling said metal end upon said body by rolling the seaming channel and curl into a cover hook engaging and pressing the said body seaming flange between said seaming channel and curl and thereby lengthening the same to a resultant predetermined length in excess of said initial predetermined length.

4,184,445

SOIL MOISTURE SIGNALING DEVICE

Walter H. Burrows, Atlanta, Ga., assignor to Compac Industries, Inc., Atlanta, Ga.

Filed Jan. 16, 1978, Ser. No. 869,470
Int. Cl.² G01N *31/06, 31/22*
U.S. Cl. 116—206 **1 Claim**

1. A soil moisture indicating device together with a display card comprising:

two sheets of plastic material having contacting surface areas and non-contacting surface areas, wherein said contacting surface areas of the two sheets are joined together over the majority of the entire surface of said two sheets and which comprise said display card, and said non-contacting surface area defines a hollow tube-shaped chamber;

a boundary between said contacting surface area and said non-contacting surface area, with said boundary being perforated so as to facilitate separation of said hollow tube-shaped chamber from said display card;

a moisture sensitive, color changeable signal element mounted in each end of said hollow tube-shaped chamber; and

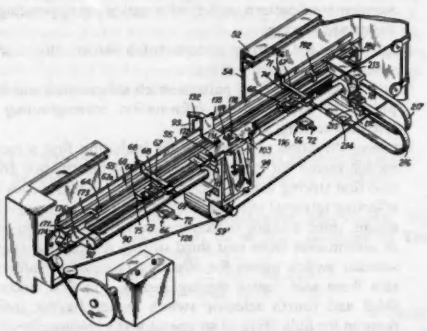
a bisection line located at the mid-point of the length of said hollow tube-shaped chamber.

4,184,446

REMOTE CONTROL APPARATUS FOR PRESETTING A TUNING DEVICE TO DESIRED STATIONS

Hajime Shichijo, Fujisawa, and Hiroshi Hosono, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,234
Claims priority, application Japan, Dec. 29, 1977, 52-176777
Int. Cl.² G12B *11/04*
U.S. Cl. 116—262 **13 Claims**



1. Apparatus for selectively rotating a shaft, comprising rotatable support means for receiving and supporting said shaft, said shaft having a longitudinal groove therein and said

support means having a nub positioned in said groove; a support structure for supporting said support means, said support means being rotatable in said support structure; at least one finger in engagement with said support means and movable to rotatably drive said support means; an operating member disposed remotely from said at least one finger for imparting movement to said finger; and flexible transmission means coupled between said operating member and said finger to move said finger when said operating member is operated.

4,184,447

TUNING APPARATUS

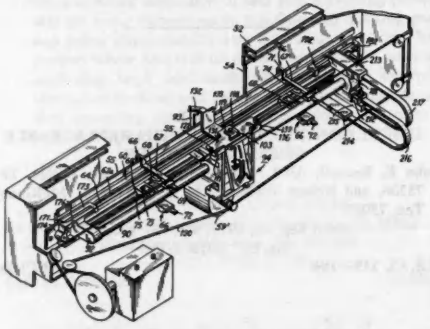
Hajime Shichijo, Fujisawa; Masamitsu Tsukatani, Tokyo, and Toshihiko Kaji, Yokosuka, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,235

Claims priority, application Japan, Dec. 29, 1977, 52-176778[U]; Jan. 31, 1978, 53-10717[U]

Int. Cl.² G12B *11/04*

U.S. Cl. 116—262 **13 Claims**



1. Tuning apparatus comprising a scale provided with indicia corresponding to different broadcast frequencies to which said tuning apparatus is tunable; pointer means movable across said scale to indicate the particular broadcast frequency to which said tuning apparatus is tuned; movable support means for supporting said pointer means and for moving said pointer means across said scale; a plurality of marking means, each being settable to a desired position along said scale to represent a particular broadcast frequency to which said tuning apparatus is tunable; first guide means for guiding said support means, said support means being slidable on said first guide means; second guide means for guiding said marking means, said marking means being slidable on said second guide means; and key means removably mounted on said first guide means and driven bi-directionally along said first guide means by the movement of said support means, said key means being selectively operative to engage one of said marking means to move the engaged marking means along said second guide means as said support means is moved along said first guide means, whereby said engaged marking means is set to a desired position along said scale.

4,184,448

VACUUM COATING APPARATUS HAVING A PLURALITY OF LOCK CHAMBERS

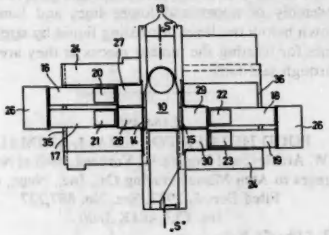
Hans Aichert; Walter Dietrich, both of Hanau am Main; Alfred Hauff; Herbert Stephan, both of Bruchköbel, and Friedrich Stark, Langenselbold, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 22, 1978, Ser. No. 963,062

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812271

Int. Cl.² C23C *13/08*

U.S. Cl. 118—729 **6 Claims**



1. Apparatus for the batch-wise coating of substrates under vacuum comprising vacuum chamber means with a coating system and a plurality of lock chamber means with substrate holder means which can be introduced into the vacuum chamber means, at least two lock chamber means with substrate holder means being positioned on common chassis means on opposite sides of the vacuum chamber means, means for movably mounting the common chassis means to align each lock chamber means with the vacuum chamber means, each lock chamber means being provided on the side facing the vacuum chamber means with lock valve means, said vacuum chamber means being likewise provided with lock valve means on the sides facing the lock chamber means whereby the lock chamber means can be coupled selectively with the vacuum chamber means through the individual lock valve means.

4,184,449

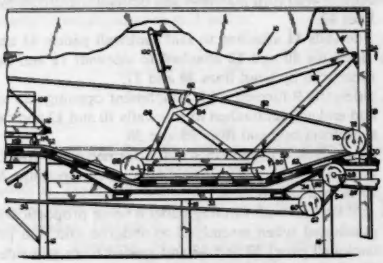
LUMBER TREATING MECHANISM

Lauren G. Louderback, Prineville, Oreg., assignor to Clear Pine Mouldings, Inc., Prineville, Oreg.

Filed Feb. 7, 1978, Ser. No. 875,802

Int. Cl.² B05C *3/10*

U.S. Cl. 118—63 **5 Claims**



1. Lumber treating mechanism comprising

(a) support means,

(b) a treating tank on said support means for holding treating liquid,

(c) said tank having forward and rearward ends and an open top,

(d) conveyor means on said support means movable longitudinally over said tank,

(e) said conveyor means including at least one pair of endless upper and lower lines operative over drive and guide pulleys and arranged to receive and frictionally hold lumber pieces therebetween,

(f) said upper and lower lines comprising resilient type ropes stretched in a position so as normally to be spaced above a liquid level in said tank,

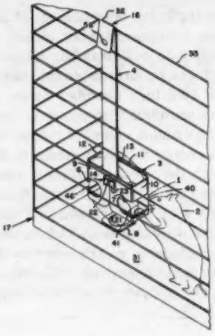
(g) and vertically adjustable hold-down means on said support means engageable with said upper line arranged to force said upper line toward said lower line and frictionally hold lumber pieces therebetween and also to force the assembly of upper and lower lines and lumber pieces down below the level of treating liquid by stretching said lines for treating the lumber pieces as they are conveyed through said tank.

4,184,450

FOOD HOLDER FOR SMALL ANIMALS

Frank W. Atchley, and Donald W. Vorbeck, both of Napa, Calif., assignors to Atco Manufacturing Co., Inc., Napa, Calif.

Filed Dec. 5, 1977, Ser. No. 857,227
Int. Cl.[2] A01K *5/00*
U.S. Cl. 119—51 R **3 Claims**



1. A device for holding a hard molded food item having edges which is to be consumed by small animals biting or gnawing said edges of said food item, formed of a blank of sheet metal, said blank comprising;

a. a bottom wall forming panel **8**;

b. a thin portion backwall panel **43** and **44** attached to said bottom wall forming panel and defined therefrom by bend lines **42**;

c. sidewalls **11** attached to said backwall panels **43** and **44**;

d. sidewalls **10** and **12** attached to sidewall **11** and defined therefrom by bend lines **36** and **37**;

e. sidewalls **9** formed with attachment openings **28** and **29** and end edges attached to sidewalls **10** and **12** and defined therefrom by bend lines **35** and **38**;

f. an elongated hanger member **4** formed with attachment means for connection to said attachment openings **28** and **29** in said sidewalls **9**;

g. said bottom wall forming panel **8** being proportioned and positioned when assembled to underlie said thin portion backwall panel **43** and **44** and spaced from said sidewalls **11, 10, 12** and **9** when said blank is folded on said bend line **42** and adapted to support and expose said edges of said food item; and

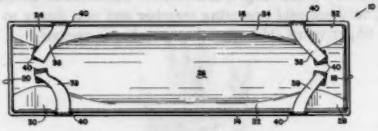
h. said sidewalls being proportioned and positioned when assembled to form a continuous sidewall except at the end edges of said sidewalls **9** and adapted to laterally hold said food item.

4,184,451

RESTRAINING DEVICE FOR ANIMAL SURGERY

Milton O. Carlin, 13111 E. 11th St., Tulsa, Okla. 73117

Filed Jul. 17, 1978, Ser. No. 925,049
Int. Cl.[2] A61G *3/00*
U.S. Cl. 119—103 **10 Claims**



1. A structure for supporting small anesthetized animals for surgical and X-ray procedures, comprising:

an elongated rectangular base having sides and ends and with a bottom for positioning on a table, and having an integral upstanding ridge along each side, each side ridge being rounded at the top and conforming to an elongated top surface which is concave in cross-section taken perpendicular the length of the base, the top surface and ridges being dimensioned to support the supine body of a small animal, the height of each ridge being reduced at each end; and

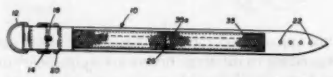
a strap adjacent each end of each ridge, each strap having one end secured to the side of the base side and the other end secured to the base concave top surface, at least one end of each strap being removably secured and in a manner whereby the length of each strap is adjustable.

4,184,452

INSECT CONTROL COLLAR WITH REPLACEABLE CHEMICAL MEMBER

John E. Buzzell, 6300 N. Central Expressway, Dallas, Tex. 75206, and Robert Willens, Rte. 7, Box 162K, McKinney, Tex. 75069

Filed Sep. 22, 1977, Ser. No. 835,798
Int. Cl.[2] A01K *27/00*
U.S. Cl. 119—106 **3 Claims**



1. An insect control collar for an animal wherein the collar has a chemical which is slowly dispersed to repel or kill insects on the animal, comprising in combination;

(a) a flexible elongate collar body dimensioned to encircle the neck of the animal,

(b) means for releasably securing the ends of said collar body to hold said collar body on the neck of the animal,

(c) an elongate, porous netting member secured along the periphery thereof to the surface of said collar body adjacent the animal to form an elongate pouch,

(d) said netting member having an opening in the midportion thereof to provide a passageway into said pouch, and

(e) a flexible, elongate member impregnated with said chemical, said member having a length greater than either of the distances from said opening to the ends of said pouch and said member being dimensioned to pass through said opening securing said member within said pouch.

4,184,453

EAR TAG LOCKING DEVICE

Eugene B Ritchey, Rte. 3, Box 58, Brighton, Colo. 80601

Filed Feb. 15, 1978, Ser. No. 878,076
Int. Cl.[2] A01K *13/00*
U.S. Cl. 119—156 5 Claims

1. The combination of a self-locking identification tag for insertion into the slit of the ear or like tissue of an animal and an additional locking device therefor, comprising:

a tag including an anchoring head having a plurality of securing ledges, said ledges being bendable for inserting said ledges through the slit in the animal's tissue, said tag further including a marking panel, a skin traversing portion joining together said anchoring head and said marking panel, said anchoring head, said marking panel, and said skin traversing portion forming means to hold said tag in a slit in an animal's tissue; and

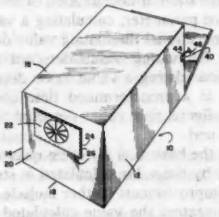
at least a first generally circular locking device having an impervious periphery and a slit centrally disposed therein, said slit being substantially equal dimensionally to the cross-sectional dimension of said skin traversing portion, said slit being dimensionally less than said marking panel and being dimensionally less than said anchoring head portion where said skin traversing portion joins with said anchoring head, said anchoring head being insertable through said slit so said device is releasably held on said skin traversing portion to provide additional means to hold the tag in the slit in the animal's tissue.

4,184,454

ANIMAL FUMIGATING UNIT

La Dee Nagao, 1602 Kalaniuka Cir., Honolulu, Hi. 96821

Filed Dec. 2, 1977, Ser. No. 856,948
Int. Cl.[2] A01K *29/00*
U.S. Cl. 119—160 12 Claims



1. An animal fumigating apparatus comprising

a container provided with an opening sufficiently large to receive the head of an animal,

means carried by the container for providing access to the interior of the container,

a flexible member connected exteriorly to a front wall of the container and extending across said opening,

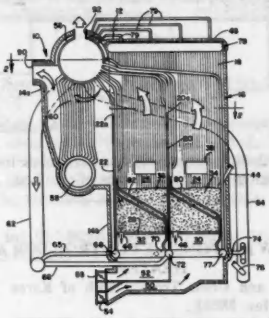
the flexible member having a portion aligned with the opening provided with intersection radial slits, said slits having sufficient length to enable said portion to flexibly receive the head of an animal projecting therethrough and to fit firmly around the animal's neck.

4,184,455

FLUIDIZED BED HEAT EXCHANGER UTILIZING ANGULARLY EXTENDING HEAT EXCHANGE TUBES

Fred M. Talmud, Berkeley Heights, and Juan-Antonio Garcia-Mallol, Morristown, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 10, 1978, Ser. No. 895,031
Int. Cl.[2] F22B *1/02;* F23D *19/02*
U.S. Cl. 122—4 D 9 Claims



1. A heat exchanger comprising a housing, means defining a chamber in said housing, means for establishing at least one bed of particulate material containing fuel in the lower portion of said chamber, means for passing air through said bed to fluidize said material and promote the combination of said fuel, said air combining with the gaseous products of combustion of said fuel and passing through the upper portion of said chamber, a steam drum, a series of tubes connected at one end to said steam drum, a portion of each of said tubes extending through said lower and upper chamber portions, the tube portions extending through said lower chamber portion being immersed in said bed with at least a portion thereof extending at an acute angle to the upper surface of said bed, the tube portions extending through said upper chamber portion extending vertically, and means connecting said steam drum to the other end of said tubes for permitting water to pass from said steam drum, through said tube portions, and back to said steam drum to transfer heat from said fluidized bed and said air and gaseous products of combustion to said water.

4,184,456

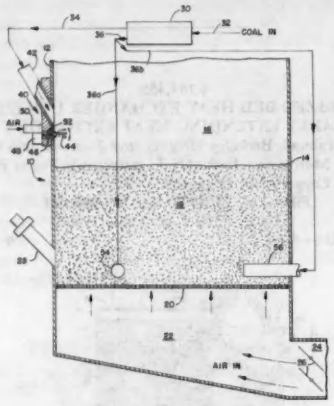
COAL FEED SYSTEM FOR A FLUIDIZED BED COMBUSTOR

Thomas E. Taylor, Bergenfield, and Richard W. Bryers, Flemington, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Sep. 20, 1978, Ser. No. 944,102
Int. Cl.[2] F22B *1/00*
U.S. Cl. 122—4 D 5 Claims

1. A fluidized bed heat exchanger comprising a housing, grate means supported in said housing and adapted to receive on its upper surface a bed of particulate material at least a portion of which is combustible, means for passing air through said grate means and said particulate material to fluidize said

particulate material, means for distributing a relatively coarse particulate fuel material to the upper surface of said bed and



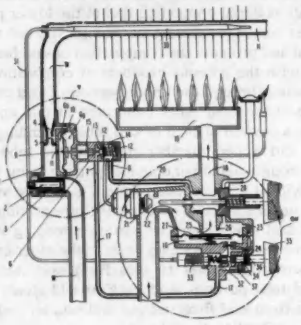
means for distributing a relatively fine particulate fuel material into said bed below the upper surface of said bed.

4,184,457

WATER FLOW RESPONSIVE CONTROL FOR A LIQUID HEATER

Albin Trotter, and Ursus Trotter, both of Karen 2908, Lac Cruces, N. Mex. 88001

Filed Mar. 27, 1978, Ser. No. 890,787
Int. Cl.[2] F22B *35/00*; F23N *1/08*
U.S. Cl. 122—448 R **2 Claims**



1. In combination with a main diaphragm valve for controlling the flow of gas to a water heater including a burner controlled in response to the flow of water to said heater, said main valve comprising first and second chambers separated by a diaphragm, said first chamber being provided with a gas inlet and a gas outlet leading to said burner, and said diaphragm being movable between a first position closing said gas outlet and a second position in which said gas outlet is left open in dependence on the relative pressure in said chambers, the improvement comprising:

gas duct means connecting said first and second chambers, and providing a passage for exhausting gas from said second chamber,

water actuated valve means responsive to the rate of flow of water through the heater for controlling the exhaust of gas from said second chamber through said gas duct means, said water actuated valve means comprising, a venturi type restrictor in a water flow line of the heater, opposed chamber separated by a diaphragm, and means connecting the diaphragm to a control valve in said gas duct means, passage means connecting one of said chambers to a throat region of said venturi restrictor, and passage means connecting the other of said chambers to said water flow line at a location spaced from said venturi restrictor, and

manually adjustable heat responsive means responsive to the temperature of the water in said heater for additionally controlling the exhaust of gas from said second chamber through said gas duct means as a function of the temperature of the water in the heater,

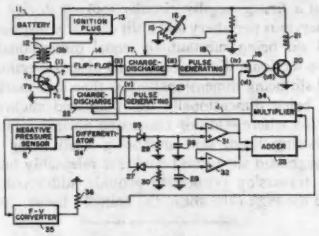
said venturi and second diaphragm comprising means for controlling the extent of opening of said control valve as a function of the rate of flow of water through the heater throughout a range of water flow ratio through the heater, so that the extent of opening of the main valve is controlled by both said heat responsive means and said control valve throughout said range of water flow ratio through the heater.

4,184,458

METHOD OF CONTROLLING FUEL INJECTION IN ENGINE AND UNIT THEREFOR

Keiji Aoki; Shigeru Uenishi, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 13, 1978, Ser. No. 877,480
Claims priority, application Japan, Oct. 19, 1977, 52/126243
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—32 EH **8 Claims**



1. Improvements in a fuel injection control method of an engine comprising the steps of:

(a) calculating the basic fuel injection quantity based on the intake air flow rate of the engine and the RPM of the engine;

(b) detecting the transitional fluctuating value of the engine during acceleration or deceleration of the engine by sensing an engine parameter, calculating a value corresponding to the transitional fluctuating value detected until the transitional fluctuating value detected reaches a peak value, and calculating a value to be decreased from the peak value at a predetermined time constant after the transitional fluctuating value detected has reached the peak value; and

(c) correcting the basic fuel injection quantity calculated in said step (a) by the value calculated in step (b);

wherein said improvements further include the steps of:

(d) further correcting the value calculated in said step (b) commensurate to the RPM of the engine;

(e) determining the fuel injection value through correcting the basic fuel injection value calculated in said step (a) by the value calculated in the step (d).

6. Improvements in a fuel injection control unit of an engine comprising: an intake air flow sensor; and output-producing RPM detector of an engine; an arithmetic unit for calculating the basic fuel injection quantity of the engine based on the intake air flow rate detected by said intake air flow sensor and the RPM detected by said RPM detector; a detector for detecting the transitional fluctuating value of the engine during

acceleration or deceleration of the engine; a first output-producing correcting circuit for correcting the basic fuel injection quantity calculated by said arithmetic unit by an output from said transitional fluctuating value detector; and a fuel injection valve driven in accordance with the output from said first correcting circuit;

wherein: said improvements include a second output-producing correcting circuit for further correcting the output from the first correcting circuit by the output from said RPM detector, with said fuel injection valve being driven in accordance with the output from said second correcting circuit.

4,184,459

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

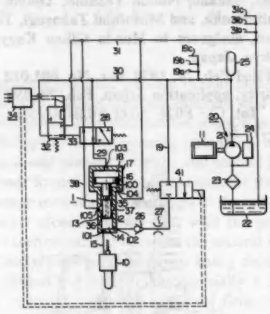
Yoshiya Ishii, Toyota; Hidetoshi Dohshita, Oobu; Yoshihisa Yamamoto, Kariya, and Hiroshi Okazaki, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 28, 1978, Ser. No. 882,151

Claims priority, application Japan, Mar. 7, 1977, 52-24970

Int. Cl.[2] F02B *3/00;* **F02M** *51/00*

U.S. Cl. 123—32 AE **10 Claims**



4. In a fuel injection system for an internal combustion engine of the type comprising:

at least one fuel injection nozzle attached to the engine for injecting fuel under high pressure into the engine;

means operated in synchronism with the operation of the engine for charging the fuel to said fuel injection nozzle in a quantity depending upon the operating condition of the engine, said fuel charging means including

a first cylinder,

a plunger slidably fitted into said first cylinder for reciprocal movement therein and defining in said first cylinder a plunger chamber which is communicated with said fuel injection nozzle,

a second cylinder having a bore diameter greater than that of said first cylinder,

a piston slidably fitted into said second cylinder for reciprocal movement therein and defining in said second cylinder a piston chamber,

means for operatively connecting said piston to said plunger in such a relation that the volume of said plunger chamber decreases as the volume of said piston chamber increases,

a fuel overflow port formed through the cylinder wall of said first cylinder, a fuel overflow passage formed in said plunger and adapted to establish the communication between said plunger chamber and said fuel overflow port when said plunger is in a predetermined position near the end of the forward stroke of said plunger;

a fuel supply means including a fuel tank, means for pumping fuel from said fuel tank and delivering fuel under a predetermined pressure and a fuel supply line for communicating said pumping means with said plunger chamber of said fuel charging means;

a fuel overflow line connected to said fuel overflow port of said fuel charging means; and

fluid control means for admitting and exhausting working fluid into and from said piston chamber in synchronism with the engine operation and depending upon the operating condition of the engine thereby controlling the reciprocal movement of said piston;

an improvement comprising a valve means provided in said fuel overflow line for opening or closing said fuel overflow line and a valve operating means for operating said valve means in such a way that said valve means closes said fuel overflow line at least when the fuel is being charged into said plunger chamber through said fuel supply line and opens said fuel overflow line at least when said plunger in the forward stroke has been displaced to said predetermined position.

4,184,460

ELECTRONICALLY-CONTROLLED FUEL INJECTION SYSTEM

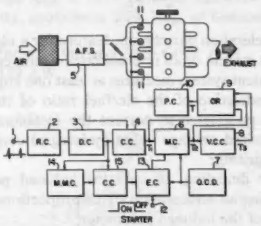
Susumu Harada, Oobu, and Masakazu Ninomiya, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 13, 1977, Ser. No. 787,225

Claims priority, application Japan, May 28, 1976, 51-62554; Jun. 21, 1976, 51-73458; Jul. 14, 1976, 51-84254; Aug. 27, 1976, 51-102827

Int. Cl.[2] F02B *3/00, 3/10;* **F02M** *51/00*

U.S. Cl. 123—32 EG **11 Claims**



1. An electronically-controlled fuel injection system for internal combustion engines comprising:

fuel injection means for injecting fuel in each cylinder of an engine during the opening thereof;

trigger means for generating a trigger signal synchronized with the rotation of said engine;

computer means for generating a first pulse signal in response to said trigger signal, said first pulse signal having a time width which is constant while the rotational speed of said engine is lower than a first rotational speed preset to correspond to the initial combustion of said fuel and is decreased as the rotational speed of said engine increases while the rotational speed of said engine is higher than said first rotational speed;

speed detection means for generating a detection signal while the rotational speed of said engine is lower than a second rotational speed higher than said first rotational speed at which second rotational speed the complete combustion of said fuel is ensured;

temperature detection means for generating a temperature signal corresponding to the temperature of said engine;

enrichment means adapted to be responsive to the operation of a starter motor for generating an enrichment signal varying in accordance with said temperature signal while said starter motor is operated, said enrichment means being disabled unless said detection signal is applied thereto;

multiplier means for generating a second pulse signal having a time width which is increased as the time width of said

first pulse signal increases and is greatly increased as the temperature of said engine falls; and

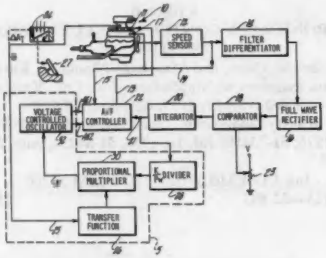
control means for opening said fuel injection means during a time width resulting from the sum of the time widths of said first and second pulse signals.

4,184,461

ACCELERATION ENRICHMENT FOR CLOSED LOOP CONTROL SYSTEMS

Chun K. Leung, Farmington Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 26, 1977, Ser. No. 836,333
Int. Cl.[2] F02D 5/00; F02M 7/06
U.S. Cl. 123—32 EH **20 Claims**



1. An acceleration enrichment feature for a closed loop fuel management system of an internal combustion engine wherein the management system measures at least one engine operating parameter indicative of the air/fuel ratio of the engine and utilizes that parameter to correct the instantaneous air/fuel ratio to a desired average value by integral control, said AE feature comprising:

means for detecting an operator induced parameter and generating an acceleration signal proportional to a characteristic of the induced parameter;

means for detecting said engine parameter indicative of the air/fuel ratio of the engine and for generating a correctional signal proportional to that parameter; and

acceleration enrichment means for generating an acceleration enrichment signal to the fuel management system in response to said acceleration signal and said correctional signal, the fuel management system controlling the air/fuel ratio of the engine in response to said enrichment signal and the integral control.

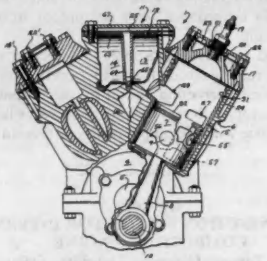
4,184,462

INTERNAL COMBUSTION ENGINE

David J. Hale, Pickett, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 610,319, Sep. 4, 1975, Pat. No. 4,092,958. This application Feb. 24, 1978, Ser. No. 880,787
Int. Cl.[2] F02B 75/22
U.S. Cl. 123—55 VS **7 Claims**

1. In a V-engine having a cylinder block with a common manifold exhaust chamber integrally formed in the block between the cylinder banks and with cylinder exhaust passageway walls extending through the opposite manifold walls of said chamber and terminating in discharge ends within the opposite sides of said chamber, said manifold exhaust chamber being laterally open and having a continuous base wall extending between said banks, a removable T-shaped manifold cover secured over the chamber with a stem portion projecting inwardly past the discharge ends of the exhaust passageway



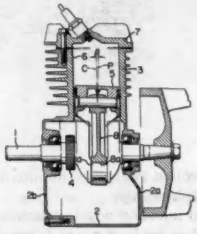
walls and into sealing engagement with the base wall to define a pair of separate exhaust passageways.

4,184,463

INTERNAL-COMBUSTION ENGINE

Noritaka Koga, Sakado; Nobuo Yoshino, Tokyo; Touichi Yoshida, Kamifukuoka, and Motofumi Takasugi, Tsurugashima, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1978, Ser. No. 881,018
Claims priority, application Japan, Feb. 28, 1977, 52-21113
Int. Cl.[2] F02F 3/00; F02B 31/00
U.S. Cl. 123—75 R **4 Claims**



1. An internal-combustion engine comprising a cylinder block having at least one cylinder bore formed therein, a piston slidably fitted in said cylinder bore to define a combustion chamber therein, a crank-shaft connected to said piston, a crankcase having a pair of divided bearing walls rotatably supporting said crankshaft, said bearing walls being different in rigidity from each other, and means mounting said piston for sliding movement along an axis which is normally inclined at a definite angle relative to the axis of said cylinder bore toward the side of that one of said bearing walls which is more rigid than the other such that during the power stroke, the cylinder block is tilted through said definite angle due to the differential rigidity of the bearing walls and the axes of the cylinder block and the piston substantially coincide with one another.

4,184,464

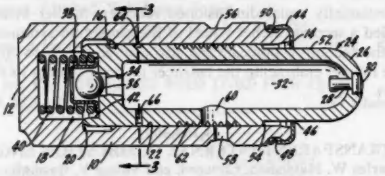
RECIRCULATION GROOVE FOR HYDRAULIC LASH ADJUSTER

Frank C. Svihlik, Bellwood, Ill., assignor to Stanadyne, Inc., Windsor, Conn.

Filed May 13, 1977, Ser. No. 796,758
Int. Cl.[2] F01L 1/24
U.S. Cl. 123—90.55 **2 Claims**

1. An engine valve train component which is operable in either a horizontal or vertical attitude, comprising:

a body having a closed end, a chamber and an open end;
a hollow plunger positioned within said chamber and having a portion extending outwardly through said body open end, a high pressure fluid chamber being formed between said body closed end and said plunger, said plunger having a closed interior end, a passage through said closed interior end, and a valve member controlling the passage of fluid through said closed interior end passage;
a relief valve in the exterior end of said plunger in communication with the hollow interior thereof;
a spring positioned in said high pressure fluid chamber;
fluid passage means in said body in communication with the exterior of said plunger;
a first unrestricted fluid passage in said plunger connecting the interior of said plunger with said body fluid passage means; and



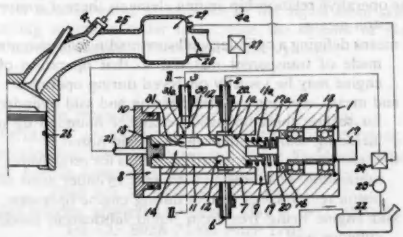
a second unrestricted fluid passage in said plunger connecting the interior thereof with the exterior, said second fluid passage including a circumferential groove on the exterior of said plunger and an opening extending between said groove and said plunger interior, said second fluid passage being closer to said high pressure chamber than said body fluid passage means and being located directly adjacent to said plunger closed interior end; with the portion of the plunger exterior located between the second fluid passage and the body fluid passage means being sized so as to fit closely against the body in substantially a fluid sealing relation wherein entrained air can flow between the plunger and body to escape out the open end of the body while fluid is prevented from passing between the plunger and body.

4,184,465

FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Tugito Nakazeki, Iwata; Kei Kimata, Aichi; Syoichi Fukunaga, Iwata; Takashi Kuroiwa, Iwata, and Seiji Morii, Iwata, all of Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka, Japan

Filed Jun. 3, 1977, Ser. No. 803,315
Claims priority, application Japan, Jun. 3, 1976, 51/65193
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 AW **7 Claims**



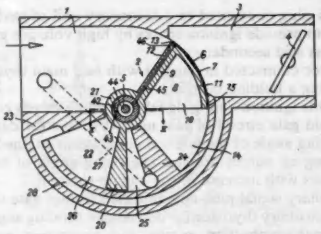
1. A fuel injection device for an internal combustion engine having an intake suction pipe including a fuel distributing mechanism comprising:
a body having:
a fuel supply port;
a plurality of discharge ports supplying injectors which inject fuel into said suction pipe of said internal combustion engine; and
fuel metering ports communicating with said discharge ports; a rotor comprising:
a fuel inlet always communicating with said supply port; and
at least one fuel distributing port communicating with said fuel inlet and cooperating with said fuel metering ports to form fuel metering gate means; said rotor being axially slidably and rotatably disposed in said body;
driving means for driving said rotor in synchronism with the rotation of the engine; and
control means for axially sliding said rotor corresponding to the amount of suction air; the arrangement being such that the amount of communication of said fuel metering gate means is controlled by engine rpm and the amount of suction air, wherein a pressure regulator communicates with said supply port and said suction pipe so that the difference between the supply pressure of fuel being supplied to said supply port and the negative pressure in said suction pipe is maintained at a predetermined value.

4,184,466

LINEAR DISPLACEMENT FLOW RATE METER

Erwin Nägele, Hessigheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 8, 1977, Ser. No. 822,501
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642957
Int. Cl.² F02M *39/00*; G01F *1/28*
U.S. Cl. 123—139 AW **8 Claims**



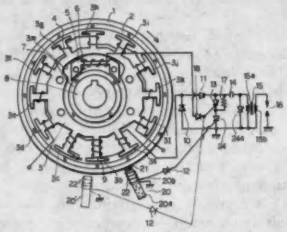
1. A flow rate meter for measuring the flow of a gaseous medium in a conduit, including in combination:
a shaft, disposed in said conduit transverse with respect to the direction of flow;
a pivotable element, attached to pivot about said shaft, the pivotal position of said element being a function of the flow rate of said medium; and in which the improvement comprises:
a lateral space in said conduit adjacent to said element;
a vane extending from said element into said lateral space, dividing said lateral space into first and second chambers of variable size, said first chamber being disposed on the downstream side of said vane and connected in continuous communication with said conduit upstream of said element to receive pressure from said conduit upstream of said element and said second chamber being disposed on the upstream side of said vane and being connected in continuous communication with said conduit downstream of said element to receive pressure from said conduit downstream of said element; whereby a torque is exerted on said element which acts in the same sense as said flow of gaseous medium.

4,184,467

CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Minoru Kato, and Masao Nagasawa, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 12, 1978, Ser. No. 905,436
Claims priority, application Japan, Jul. 30, 1977, 52-92039
Int. Cl.[2] F02P *1/00*
U.S. Cl. 123—148 E **4 Claims**



1. A contactless ignition system for internal combustion engine comprising:
an electric source having an output;
a discharging circuit including:
a capacitor connected to said electric
source to be charged by the output of said electric source;
a main thyristor connected to said capacitor and having a gate circuit;
an auxiliary thyristor having a gate circuit, and
a primary coil of an ignition coil;
said discharging circuit being arranged for discharging the current charged on said capacitor by conduction of both said thyristors through said primary coil of said ignition coil;
a spark plug connected to a secondary coil of said ignition coil to provide ignition sparks by high voltages generated across said secondary coil;
a resistor connected in parallel with said main thyristor for passing a holding current;
a variable ignition timing signal generating means connected to said gate circuit of said main thyristor for detecting a rotating angle of the internal combustion engine and generating an output voltage, the rising angle of which increases with increase of the engine rotation;
an auxiliary signal pick-up connected to said gate circuit of said auxiliary thyristor for detecting a rotating angle of the internal combustion engine and generating an output voltage having a steep rising angle which rises behind said variable ignition timing signal and which at least partly overlaps with the output voltage of said variable ignition timing signal.

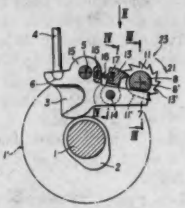
4,184,468

DECOMPRESSION DEVICE FOR INTERNAL COMBUSTION ENGINES

Fritz Freyn, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Jun. 19, 1978, Ser. No. 916,546
Claims priority, application Austria, Jun. 23, 1977, 4459/77
Int. Cl.[2] F01L *13/08*; F02H *53/06*
U.S. Cl. 123—182 **4 Claims**

1. A decompression device for internal combustion engines to suspend and automatically turn on again compression after several rotations of the engine during the engine start by way of lifting a valve of the engine for a certain time, said compression device comprising a camshaft operated balancer acting on said valve, a decompression cam rotatable on its own axis and acting on the balancer, and a rotation device to rotate the decompression cam, said rotation device consisting of a ratchet rotatably secured to the balancer and a ratchet wheel with a notchless segment in engagement with the ratchet and rigidly connected to the decompression cam, the axis of the decompression cam being arranged parallel to the axis of the balancer, the balancer having a reduced breadth in the range of the rotation device, said reduced breadth being formed by two



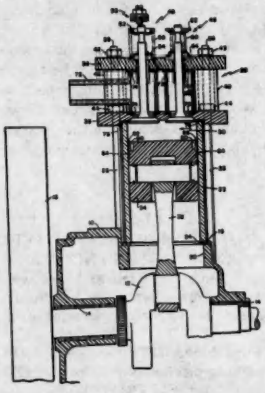
substantially equal dimensioned recesses, further being provided a second ratchet wheel of the same kind symmetrically to the decompression cam and also secured rigidly to the latter, the ratchet embracing the balancer on both sides at its narrow part.

4,184,469

TRANSPARENT INTERNAL COMBUSTION ENGINE

Charles W. Haldeman, Concord, and Vahan V. Basmajian, Lexington, both of Mass., assignors to Megatech Corporation, Billerica, Mass.

Continuation of Ser. No. 407,228, Jan. 29, 1975, abandoned, which is a reissue of U.S. Pat. No. 3,698,370, filed Sep. 3, 1970. This application Dec. 5, 1977, Ser. No. 857,367
application Dec. 5, 1977, Ser. No. 857,367
Int. Cl.[2] F02F *1/00*
U.S. Cl. 123—193 CP **23 Claims**



1. An operative internal combustion engine for displaying the operative relationship among elements thereof comprising,
piston means,
means defining a cylinder wall surrounding the piston means made of transparent material so that operation of said engine may be visually observed during operation
and means coacting with said piston and said cylinder wall for sealing the combustion chamber bounded by means including said cylinder wall and said piston,
the latter means also comprising means for establishing a dry lubricating relationship with said cylinder wall as said piston reciprocates therein during engine operation,
said engine being free from liquid lubrication inside said cylinder wall,
said means for sealing said combustion chamber comprising at least one sealing ring made of resilient self-lubricating material having a low coefficient of friction attached to

said piston means and sealing the region between said piston means and said cylinder wall,

said engine including first means on said piston means for supporting said piston means to permit relative axial displacement with said cylinder wall and means cooperating with said first means and said piston means for radially spacing said piston from said cylinder wall in noncontracting relationship therewith,

said piston means made of material which if allowed to contact the cylinder wall directly would damage said cylinder wall while said sealing ring and said means for radially spacing prevent damage to said cylinder wall.

4,184,470

EGR CONTROL SYSTEM OF MULTI-CYLINDER ENGINES

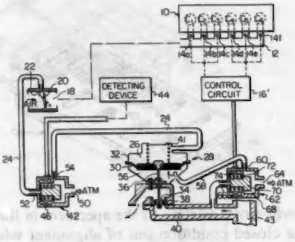
Haruhiko Iizuka, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 13, 1978, Ser. No. 896,226

Claims priority, application Japan, Apr. 22, 1977, 52-51797[U]

Int. Cl.[2] F02M *25/06;* F02D *17/02;* F02B *75/10*

U.S. Cl. 123—198 F **17 Claims**



1. A multi-cylinder internal combustion engine of the type wherein fuel supply to a predetermined group of cylinders is controlled to be stopped in accordance with engine operating conditions, said engine having an intake passageway and an exhaust gas passageway which are communicable with all cylinders of the engine, comprising:

an exhaust gas recirculation (EGR) passageway through which the exhaust gas passageway is communicable with the intake passageway to recirculate a part of exhaust gases through the intake passageway back to the cylinders;

an EGR control valve operatively disposed in said EGR passageway, the opening degree of said EGR control valve being controllable in response to vacuum in the intake passageway to control the amount of the exhaust gases recirculated to the cylinders;

sensing means for sensing a certain engine operating condition in which fuel supply to the predetermined group of cylinders is stopped, to produce a signal; and

increasing means for increasing the opening degree of said EGR control valve in response to the signal from said sensing means in order to increase the amount of the exhaust gases recirculated back to the cylinders.

4,184,471

SOUND PROOF ENCAPSULATED ENGINE, ESPECIALLY AN INTERNAL COMBUSTION ENGINE

Karl Kirchweger; Gerhard Thien, and Heinz Fachbach, all of Graz, Austria, assignors to Hans List, Graz, Austria

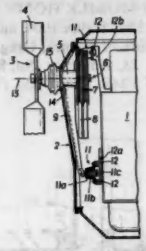
Filed Apr. 24, 1978, Ser. No. 899,317

Claims priority, application Austria, May 6, 1977, 3260/77

Int. Cl.[2] F02B *77/00;* F01P *1/02*

U.S. Cl. 123—198 E **4 Claims**

1. A sound proof encapsulated engine, particularly an internal combustion engine, comprising an engine case, a sound-suppressing outer casing surrounding said engine case, a fan, a fan shaft supporting said fan, a housing surrounding said shaft, a fan drive coupled with said shaft, an intermediate support mounted on said housing and being secured to said engine case for supporting said fan, said support being secured to said



engine case by means of a plurality of elastic sound-absorbing elements respectively located at a plurality of bearing points, said housing lying partially within said outer casing, and said fan drive, said intermediate support and said sound-absorbing elements being disposed wholly within said outer casing.

4,184,472

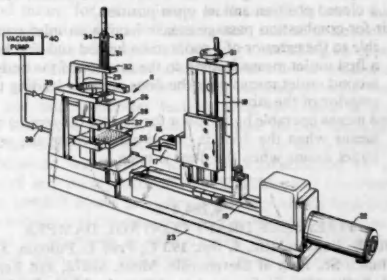
METHOD AND APPARATUS FOR SLICING CRYSTALS

John S. J. Benedicto, Falls Church, Va.; Bruce E. Woodgate, Crofton, and Frederick C. Hallberg, Wheaton, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 15, 1978, Ser. No. 906,298

Int. Cl.[2] B28D *1/32*

U.S. Cl. 125—23 R **3 Claims**



1. Apparatus for slicing a soft crystal in a plane parallel to first and second flat opposed parallel end faces of said soft crystal comprising vacuum chamber means including a stationary platen having perforations therein for gripping said first flat end face of said soft crystal with vacuum, a moveable platen having perforations therein for gripping said second flat end face of said soft crystal with vacuum, said moveable platen being moveable substantially perpendicular to said plane, and spring means coupled to said moveable platen and applying a continuous force thereto substantially perpendicular to said plane and away from said stationary platen for applying stress forces to said soft crystal; a cleaving blade selectively moveable substantially perpendicular to and parallel to said plane; means for holding said cleaving blade at a position to enable said soft crystal to be cut by said cleaving blade through said plane; means for adjusting the position of said holding means so the cutting plane of said cleaving blade can be adjusted relative to the end faces; and means for driving said holding means so

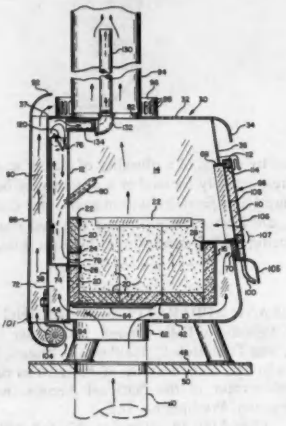
said cleaving blade is driven into contact with a side of said soft crystal in said cutting plane where said cleaving blade has been adjusted.

4,184,473

IMPROVED MOBILE HOME HEATER

Kendrick H. McIntire, Rte. 2, Box 1000, and John E. McIntire, Rte. 2, Box 151-A, both of Aurora, Oreg. 97002

Filed Feb. 23, 1978, Ser. No. 880,702
Int. Cl.[2] F24B *5/00*; F23J *11/00*
U.S. Cl. 126—77 **9 Claims**



1. In a heater,
a body having a fireplace door opening,
a fireplace door hinged to the body for movement between a closed position and an open position,
air-for-combustion passage means having an inlet connectible to the exterior of a room to be heated and also having a first outlet means leading to the interior of the body and second outlet means near the door opening leading to the exterior of the stove,
and means operable by the door for closing the second outlet means when the door is closed and opening the second outlet means when the door is open.

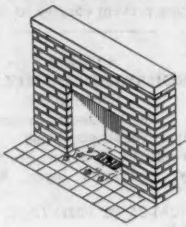
4,184,474

FIREPLACE DRAFT CONTROL DAMPER

James B. Pulliam, Rte. 1, Box 193 C; Fred L. Pulliam, 311 S. Church St., both of Stevensville, Mont. 59870, and Kenneth M. Kelly, 1817 W. Sussex Ave., Missoula, Mont. 59801

Filed Mar. 13, 1978, Ser. No. 886,047
Int. Cl.[2] F24B *7/00*; F23L *3/00*
U.S. Cl. 126—121 **3 Claims**

1. A fireplace draft control damper for mounting in a rectangular opening in a fireplace in which the opening is defined by sidewalls that are spaced equivalent to the length and width dimension of a standard fireplace brick, comprising:
a base plate for covering the opening in which the base plate has front and back surfaces with length and width dimensions greater than the opening;
longitudinal lips affixed in parallel spaced orientation to the back surface of the base plate and projecting outward therefrom in which the length of the lips is less than the length dimension of a standard fireplace brick and the spaced distance between the longitudinal lips is slightly less than the width of a standard fireplace brick to enable the base plate to be fitted over the fireplace opening with the longitudinal lips projecting into the opening with the lower surface of the base plate flush with the fireplace;
a rectangular draft plate slidably mounted in the back surface of the base plate between the longitudinal lips for longitudinal movement with respect to the base plate;
a plurality of apertures extending through the base plate;
a plurality of apertures extending through the draft plate and arranged in a pattern similar to the arrangement of apertures in the base plate so when the draft plate is moved longitudinally relative to the base plate between an inoperative and operative position, the apertures in the base



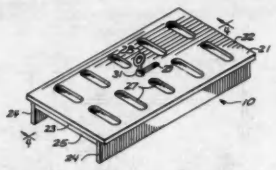


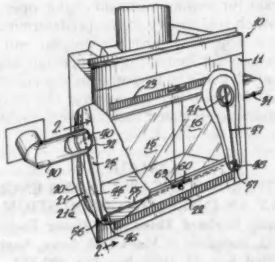
plate will move relative to the apertures in the draft plate from a closed condition out of alignment with the apertures in the base plate to a condition wherein the apertures are in direct alignment to allow free passage of air therethrough; and
a control knob on the draft plate to facilitate sliding movement of the draft plate relative to the base plate between the inoperative and operative positions.

4,184,475

FIREPLACE

Francis L. Faehling; Thomas F. Billmeyer, and Robert G. Moss, all of Wisconsin Rapids, Wis., assignors to Preway Inc., Wisconsin Rapids, Wis.

Filed Jul. 12, 1977, Ser. No. 815,066
Int. Cl.[2] F24B *7/00*
U.S. Cl. 126—121 **2 Claims**



1. A fireplace having a casing with a panel extending across the bottom thereof and a front opening thereabove and having an internal wall defining a firebox, passage means in the casing for delivery of external combustion air to the firebox including

a pair of outlet openings in opposite wall sections of the firebox, an intake damper positioned in each outlet openings, a pair or rotatable rods connected one to each of said intake dampers and extended downwardly and forwardly to have the lower ends of said rods positioned one at each front corner of the fireplace, a link positioned behind said panel and extended across the width of the fireplace and having opposite ends loosely connected one to each of the rod lower ends, and a handle extended through said panel and connected to said link intermediate the ends thereof and operable from the front of the fireplace whereby handle movement causes movement of the link and simultaneous rotation of the rods and movement of the intake dampers.

4,184,476

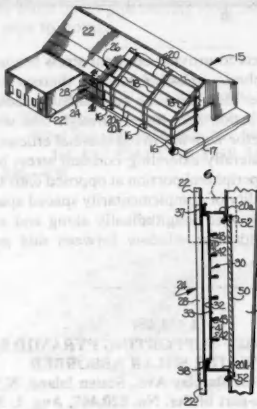
SOLAR ENERGY COLLECTING APPARATUS

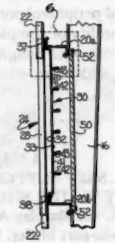
William H. McArthur, P.O. Box 236, Forest City, N.C. 28043

Filed Aug. 26, 1977, Ser. No. 827,948

Int. Cl.² F24J *3/02*

U.S. Cl. 126—429 **17 Claims**





1. A wall structure adapted to form an exterior wall or roof of a building and having a solar energy collector integrally incorporated therein, and wherein the solar energy collector is characterized by the absence of components which protrude outwardly beyond the normal contour of the wall structure, and comprising

a plurality of parallel, spaced apart structural support members,

exterior panel means which are transparent to solar radiation mounted along the outside edges of two adjacent support members and overlying a substantial portion of the area therebetween,

interior panels means mounted along the inside edges of said two adjacent support members and being parallel to and transversely aligned with said exterior panel means,

solar energy absorptive panel means mounted to extend between said two adjacent support members and underlying substantially the full area of said transparent exterior panel means, and such that said two adjacent support members, interior panel means, and solar energy absorptive panel means collectively define an air passageway,

additional exterior panel means mounted along the outside edges of the support members and such that said transparent panel means and additional panel means are substantially co-planar and collectively define the exterior surface of said wall structure, and

means for conveying air along said passageway, whereby solar energy is able to pass through said transparent exterior panel means and warm said solar energy absorptive panel means, and the air passing along said solar energy absorptive means absorbs heat therefrom.

4,184,477

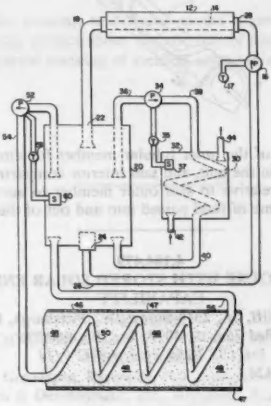
SOLAR HEATING AND STORAGE

Shao W. Yuan, 6701 Montour Dr., Falls Church, Va. 22043

Filed May 3, 1977, Ser. No. 793,367

Int. Cl.² F24J *3/02*

U.S. Cl. 126—433 **9 Claims**



1. A system for collecting, storing and utilizing solar energy, said system including a thermal tank containing a liquid and being substantially filled thereby, solar collector means for transmitting heat energy to said thermal tank, heat storage means, means for transmitting heat energy to and from said thermal tank and said heat storage means, a heat utilization tank, and means for recirculating heat energy between said thermal tank and said heat utilization tank, said solar collector means including a unidirectional heat pipe including an upper evaporator section, an adiabatic section and a lower condenser section, said evaporator section being exposed to solar heat energy and said condenser section being immersed in said thermal tank, said unidirectional heat pipe further including wick means disposed in said evaporator section and a working fluid contained within said heat pipe, characterized by an absence of any wick means in said adiabatic and condenser sections, conduit means extending externally of said heat pipe and connecting said condenser section to said evaporator section, and pump means in said conduit means for pumping condensed fluid from said condenser section and into said evaporator section.

4,184,478

HEAT EXCHANGERS AND SOLAR HEATING

Dean L. Fuller, Greytown, New Zealand, assignor to Solar Products Limited, Greytown, New Zealand

Filed Nov. 21, 1977, Ser. No. 853,815

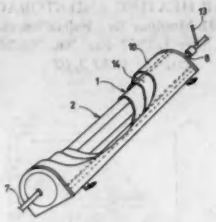
Claims priority, application New Zealand, Nov. 22, 1976, 182676

Int. Cl.² F24J *3/02*

U.S. Cl. 126—434 **9 Claims**

1. A heat exchanger and fluid storage unit comprising an outer tubular heat absorbent member closed at its ends and provided with a fluid inlet at one end and a fluid outlet at the other end, and an inner tubular member of different cross-sectional shape to the cross-sectional shape of the outer tubular member, said inner tubular member being positioned within said outer tubular member and having a tubular peripheral wall defining an interior fluid compartment, said tubular peripheral wall having an outer surface defining a plurality of longitudinal

lines of contact with the inner surface of the outer member to form a plurality of longitudinal fluid ducts between the outer and inner members between said lines of contact, said ducts having opposite end parts in communication with the interior



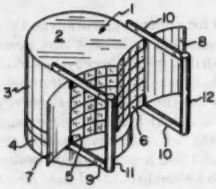
compartment of the inner tubular member for circulation of the fluid within the unit, and said interior compartment being dimensioned relative to said outer member to accommodate the main volume of fluid passed into and out of the unit.

4,184,479

GREENHOUSE WITH STORED SOLAR ENERGY CAPABILITY

George D. Ratliff, Jr., 2314 Forest Dr., Pittsburgh, Pa. 15235

Filed Jan. 10, 1978, Ser. No. 868,326
Int. Cl.[2] F24J 3/02; A01G 9/14
U.S. Cl. 126—424 9 Claims



1. A greenhouse over an agricultural bed or the like comprising a rotating structure over said bed having an axis of revolution generally normal to the surface of the earth,

at least one window in said structure lying within a generally parabolic trough surface generated by a line moved parallel to a line external to said structure being the focus of said parabolic surface, said line comprising the parabolic focus being generally normal to the surface of the earth or forming an acute angle with a line generally normal to the surface of the earth,

a heat collector positionable along the line comprising the parabolic focus,

means for automatically rotating the structure at a rate to cause the window to continuously face the sun,

whereby solar energy is transmitted through said window and is reflected from said window to the heat collector.

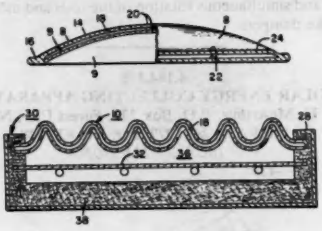
4,184,480

VACUUM WINDOW FOR SOLAR TRANSMISSION

Neal S. Kenny, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 10, 1978, Ser. No. 894,519
Int. Cl.[2] F24J 3/02; E04B 7/18
U.S. Cl. 126—450 2 Claims

1. A flat plate solar collector comprising, housing means, a composite evacuated contoured solar window overlying said housing means and providing an air space cavity therebetween, said composite evacuated contoured solar window being supported by said housing means solely about peripheral portions of said window, insulation means within said housing means, flat plate collector means positioned within said cavity and having fluid channel means associated therewith for removing heat therefrom, said composite evacuated contoured solor window including a pair of complementarily contoured glass sheets each having a longitudinal extent and a lateral extent, such sheets being sealed together about peripheral portions thereof, a partially evacuated chamber formed between said complementarily contoured glass sheets, each of said sheets having complementary corrugations extending longitudinally therealong, said corrugations being curved laterally across the



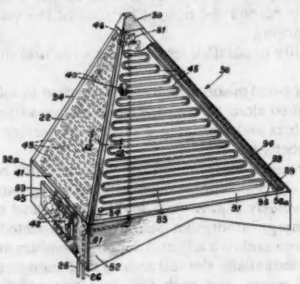
extent of said sheets to provide constant stress beams so as to withstand atmospheric pressure exerted thereon while the evacuated chamber therebetween substantially reduces conduction and convection heat losses through said window to provide said collector with improved thermal efficiencies, and said plurality of laterally extending constant stress beams extending from said peripheral portion at opposed ends thereof in the form of a plurality of complementarily spaced apart paraboloidal beams positioned longitudinally along and extending laterally across said solar window between said peripheral portions thereof.

4,184,481

DIRECTIONAL SELF-SUPPORTING PYRAMID SHAPED HOT WATER SOLAR ABSORBER

August Tornquist, 125 Barclay Ave., Staten Island, N.Y. 10312

Continuation-in-part of Ser. No. 820,467, Aug. 1, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 942,936
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—422 10 Claims



1. A pyramidal water solar absorber comprising:

(a) a base having upwardly extending side walls;

(b) a plurality of triangular panels extending upwardly from the base, the panels forming the lateral faces of a pyramid, the pyramid having an opening at its vertex, said panels being formed in predetermined sizes, each panel comprising:

(1) an outer layer of heat transmitting protective material;

(2) a middle layer of heat absorber elements having water

heating tubing in contact with a metal heat transfer surface;

(3) an inner layer of insulation material.

(c) connecting means to attach the lateral edges of the panels;

(d) a metal cap removably mounted on the vertex of the pyramid;

(e) a heat sensor operably mounted in each panel;

(f) a cold water supply line;

(g) a plurality of electrically operated water valves;

(h) a plurality of cold water connection pipes, leading from the cold water supply line into each water valve and out of each water valve to the lower end of the water heating tubing of an absorber element, each absorber element being connected to its own water valve;

(i) a water circulating pump, each heat sensor being electrically connected to a water valve and to the water circulating pump;

(j) a hot water collection pipe connected in series to the upper ends of the water heating tubing;

(k) an air eliminator mounted in the hot water collection pipe;

(l) a hot water outlet pipe leading from the hot water collection pipe to storage.

4,184,482

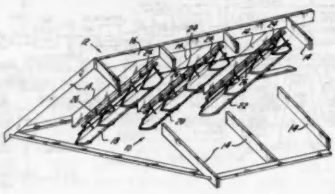
SOLAR ENERGY COLLECTING SYSTEM

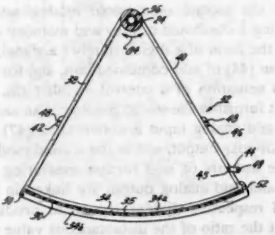
Eli Cohen, 350 Continental Ave., Paramus, N.J. 07652

Filed Sep. 29, 1978, Ser. No. 946,957

Int. Cl.[2] F24J *3/02*; F25F *7/00*

U.S. Cl. 126—438 **10 Claims**





1. A solar energy-collecting system, comprising in combination:

a flexible, relatively thin film including a solar energy-reflecting surface;

a plurality of frame members, one each of which is secured to one of a plurality of parallel, spaced strip-like zones on said film, said frame members being parabolically arced at the portion thereof secured to said zones on said film, said members thereby forming said film at said zones into parabolic arcs, with said reflective surface residing on the concave side of said arc;

means for generating a biasing force between adjacent spaced frame members tending to displace same away from one another to thereby pull and maintain said film in a taut condition between said spaced parabolically arced zones, thereby maintaining said flexible film in the configuration of a line-generated parabolic surface;

energy conversion means disposed along the line of geometric foci of said parabolic surface for receiving reflected solar energy from said surface and converting same into a further utilizable energy form;

support means for said frame means and energy conversion means for disposing said system to receive incident solar energy onto the concave side of said parabolic surface; and

means for rotating said frame means together with said parabolic surface about the said line of foci, to enable at least partial tracking of incident solar radiation.

4,184,483

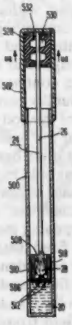
METHOD OF AND APPARATUS FOR COLLECTING CULTURES

Donald J. Greenspan, Riverside, N.J., assignor to U.S. Medical Research & Development, Inc., Riverside, N.J.

Continuation-in-part of Ser. No. 589,521, Jun. 23, 1975, Pat. No. 4,014,746, which is a continuation-in-part of Ser. No. 358,350, May 8, 1973, Pat. No. 3,890,954. This application Mar. 25, 1977, Ser. No. 781,298

Int. Cl.[2] A61B *10/00*

U.S. Cl. 128—759 **34 Claims**



1. Apparatus for collecting cultures and the like comprising:

a container having an open and closed end and having a first chamber and a second chamber therein;

a culture-sustaining medium positioned within said second chamber;

a swab including an elongated member and an absorbent tip retained within said container;

means communicating between said first chamber and said second chamber so as to permit said medium to pass from said second chamber to said first chamber while said absorbent tip is retained within said first chamber;

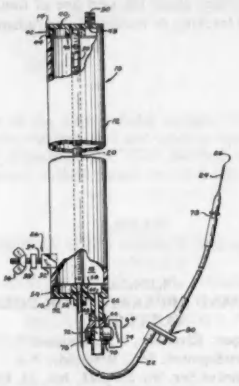
said first chamber being formed in part by a barrier member including an opening adapted to permit said absorbent tip to pass therethrough into said first chamber forming a substantially leak-proof seal around said swab at said opening so as to prevent gravity flow of said medium through said opening.

4,184,484

BODY FLUID PRESSURE INDICATOR AND REGULATOR AND METHOD FOR CONTINUOUSLY REGULATING AND MONITORING THE PRESSURE OF A BODY FLUID

Ballard D. Wright, 983 Edgewater, Lexington, Ky. 40502, and Susan E. Clifford, Bala Cynwyd, Pa., assignors to Ballard D. Wright, Lexington, Ky.

Filed Oct. 11, 1977, Ser. No. 841,253
Int. Cl.[2] A61B 5/00
U.S. Cl. 128—748 **15 Claims**



1. A body fluid pressure indicator and regulator comprising: walls defining an internal chamber, vent opening means in said chamber to continuously vent said chamber to the ambient so that said chamber is always at ambient pressure while maintaining said chamber contamination free, elongated indicator means carried at least in part within said chamber, conveying means for continuously conveying body fluid between its source in the body of a patient and said indicator means without any valve means through said indicator means having its lower end communicating continuously with said conveying means so that the body fluid is conducted into said indicator means when the pressure of the body fluid increases and out of said indicator means when the pressure of the body fluid decreases and is below a maximum desired pressure, the distance the body fluid extends along said indicator means representing the pressure of said fluid, said indicator means having its upper end terminating in said chamber, and said indicator means having pressure limiting opening means interior of said chamber and spaced a selected, fixed distance above said lower end of said indicator means in accordance with the maximum desired pressure of the body fluid, said pressure limiting opening means providing an upper limit to the body fluid pressure by permitting escape of the fluid from said indicator means into said chamber when the pressure of the body fluid exceeds its maximum desired pressure to regulate the pressure of the body fluid.

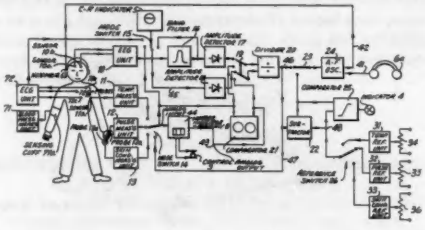
4,184,485

MEASURING ARRANGEMENT FOR DECREASING THE EMOTIONAL INFLUENCE ON INSTRUMENTAL DIAGNOSTICAL MEASUREMENTS

Mihaly Agoston, Budapest, Hungary, assignor to Medicor Muvek, Budapest, Hungary

Filed Dec. 12, 1977, Ser. No. 859,287
Claims priority, application Hungary, Feb. 13, 1975, 1834
Int. Cl.[2] A61B 5/04
U.S. Cl. 128—670 **5 Claims**

1. A measuring arrangement for decreasing the emotional influence on instrumental diagnostical measurements, comprising, in combination: instruments (**7, 71, 72**) for performing diagnostical tests on a patient; an EEG unit (**10**) for performing biofeedback; and at least one further unit, from among temperature, pulse and skin-conductivity measuring units (**11, 12, 13**), also for performing biofeedback; probes and sensors (**10***a*, **10***b*, **11***a*, **12***a*, **13***a*, **71***a*, **72***a*, **72***b*, **72***c*) for hooking up the patient to respective inputs of said instruments, said EEG unit and said at least one further measuring unit; said units being linked to indicator means (**5, 8**) through an operational mode switch (**14**) having positions for at least a first, EEG mode and a second, different operational mode; said indicator means including means (**6***a*, **6***b*) for furnishing separate information, to at least one of the patient and an operator, about the value of the feed-back characteristics; wherein said EEG unit has an output that leads (**45**) to first (**18**) and second (**17**) amplitude detectors, the latter through a band filter (**16**) which has a switchable frequency band of between 7 and 14 Hz; said detectors have outputs connectable to respective inputs of a divider circuit (**20**) through a first switch (**19**), the latter also having positions for at least the first and the second operational modes; said divider circuit having an output (**46**) that furnishes a signal in the first mode that is proportional to the relative amplitude of alpha waves of the patient; said information furnishing means being constituted by at least one headphone operatively associated with a first one (**42**) of two outputs (**42, 41**) of an adjustable audio oscillator (**24**); a control input of the latter is selectively connectable in the first mode to said divider output through a second switch (**23**) also having positions for at least



the first and the second operational modes; said indicator means including a combined display and memory unit (**8**), for displaying in the form of a digital number a signal, applied to an analog input (**44**) of said combined unit, and for storing the number upon actuation of a control member (**3**), while said combined unit furnishes the stored number at an analog output (**43**) thereof; said analog input is connectable (**47**) in the first mode to said divider output, and in the second mode to one of the respective outputs of said further measuring units; said analog input and said analog output are linked in the second mode to said respective divider inputs, to produce at said divider output the ratio of the instantaneous value of the analog signal and of the stored number, expressing the efficiency of the biofeedback; said divider output is connectable to one of the inputs of a subtractive circuit (**22**); an inverting-type input (**48**) of the latter is connectable to one of respective terminals of at least one reference unit (**31, 32, 33**), corresponding in number to that of said at least one further measuring unit; an output of said subtractive circuit is connectable in the second mode to said oscillator control input; and control means (**15, 26**) for selectively individually and simultaneously performing the aforesaid selective connections between said instruments, said EEG unit, said at least one further measuring unit, said indicator means, said detectors, said divider circuit, said oscillator, said combined unit, said subtractive circuit and said reference units, in association with said operational mode switch as well as said first and said second switches.

4,184,486

DIAGNOSTIC METHOD AND SENSOR DEVICE FOR DETECTING LESIONS IN BODY TISSUES

Lajos Papa, Hatvan, Hungary, assignor to Radelkis Elektrokemiai Muszergyarto Szovetkezet, Budapest, Hungary

Filed Aug. 11, 1977, Ser. No. 823,586
Int. Cl.[2] A61B 5/05
U.S. Cl. 128—642 3 Claims

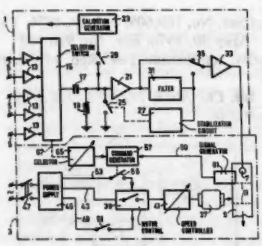
1. A diagnostic method for detecting the location and/or character of a lesion in body tissues, comprising the steps of: placing a pair of electrodes in contact with the tissue being tested; connecting an electric measuring device to the electrodes; measuring electric characteristics of the tissue relative to the current that flows through the electrodes; almost short-circuiting the electrodes through the measuring device; and determining from the current through the electrodes whether the tissue is sound or has a lesion therein.

4,184,487

ELECTROCARDIOGRAPH

Christoph Peyer, Belp, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1978, Ser. No. 896,168
Claims priority, application Netherlands, Apr. 18, 1977, 7704185
Int. Cl.[2] A61B 5/04
U.S. Cl. 128—710 3 Claims



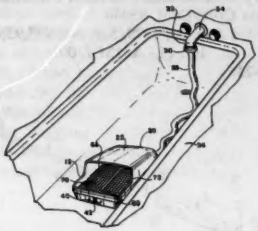
1. In an electrocardiograph for recording an electrocardiogram on fan-folded paper, which comprises a signal processing section, including a derivation selection switch and an ECG amplifier which controls a recording stylus, and a paper transport section, including a paper transport motor, motor control means which switch the paper transport motor on and off, and signal generator means which function to supply an indication signal each time when a fold in the fan-folded paper passes the stylus, the improvement wherein the output of the signal generator (61) is connected to a command generator (57) which is adjustable by means of selection means (65) and functions to apply a "stop" command to the motor control means (39) when the signal generator means (61) have supplied a predetermined number of indication signals following switching on of the paper transport motor (37).

4,184,488

HYDROTHERAPEUTIC FOOT MASSAGER

Guillermo J. Bielich, 38002 15th St. E., Palmdale, Calif. 93550

Filed Mar. 16, 1978, Ser. No. 887,169
Int. Cl.[2] A61H 9/00
U.S. Cl. 128—66 3 Claims



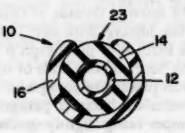
1. A portable foot massaging hydro-therapy unit comprising a tank adapted to be connected to a faucet of a bathtub, a plate fitting in the bottom of said tank; a manifold assembly connected to said faucet, said assembly being held on said plate and including a plurality of connecting conduits each having spaced discharge openings for discharging water outwardly and upwardly; a foot-sole receiving grid fitting over said assembly and receiving water from said openings; said grid having spaced screen sections resulting in a foot massage effect to feet thereon.

4,184,489

INFUSION TUBE ACCESS SITE

Samuel Burd, Oakland, Calif., assignor to Cordis Dow Corp., Miami, Fla.

Continuation-in-part of Ser. No. 729,940, Oct. 6, 1976, abandoned. This application Dec. 1, 1977, Ser. No. 856,383
Int. Cl.[2] A61M 5/00, 1/03; F16L 11/12
U.S. Cl. 128—214 R 4 Claims



1. An infusion tube access site comprising an infusion tube, an elongated elastomeric sleeve surrounding a portion of said infusion tube and a needle impenetrable plastic tubular member partially surrounding said sleeve for substantially the full length thereof, said tubular member being slotted axially from end to end and said slot being between and defined by inner end portions of the walls of said tubular member which extend above a horizontal plane passing through the diameter thereof, said tubular member having an inner diameter smaller than the outer diameter of said sleeve prior to assembly of said sleeve within said tubular member and said tubular member having a preselected wall thickness and resistance to deformation from a circular cross-section to provide compressive and radial pressure on said partially surrounded sleeve sufficient to cause said elastomeric sleeve to (bulge upwardly) deform from (a) its circular cross-section prior to assembly to a non-circular cross-section including an axially extending bulged portion lying within said slot, and said pressure on said sleeve and the resultant forces within said bulged portion being sufficient to prevent leaks into said tube during the time a needle pierces said

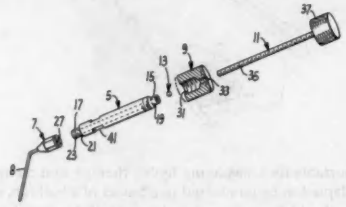
sleeve and said tube, and to seal the opening resulting from withdrawal of said needle from said tube and said sleeve.

4,184,490

PRECISION ENDODONTIC SYRINGE

John Jacklich, c/o Continuing Education Consultants 102 Western Ct., Santa Cruz, Calif. 95060

Filed Aug. 23, 1978, Ser. No. 935,938
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—236 **2 Claims**



1. An endodonic syringe comprising in combination:

a. a metal barrel of generally tubular shape having a proximal end and a distal end;

b. a mirror-smooth, cylindrical internal passage extending for the entire length of said barrel;

c. a reduced diameter portion on the external surface of the distal end;

d. external threads of said reduced diameter portion;

e. a needle base having an outer surface forming a continuation of the outer surface of said barrel;

f. said needle base having internal threads mating with the external threads of paragraph d and having an internal cylindrical passage forming a continuation of the passage of paragraph b;

g. external threads on the proximal end of said barrel;

h. a cap on said proximal end having:

(1) a first set of internal threads mating with the external threads of paragraph g and

(2) a second set of internal threads of reduced diameter;

i. a threaded member mating with and passing through and engaged with the threads of paragraph h (2), said threaded member extending beyond both ends of the cap, at one end into said cylindrical passage of paragraph b and at the other end beyond the end of the barrel of paragraph a, the lands of said threaded member being slightly smaller than the diameter of the cylindrical passage of paragraph b;

j. a resilient loose ball snuggly fitting in said passage and adapted to being engaged by said threaded member and;

k. handle means on the distal end of said threaded member to turn the same.

4,184,491

INTRA-OCULAR PRESSURE NORMALIZATION TECHNIQUE AND EQUIPMENT

William J. McGannon, Lakewood, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 31, 1977, Ser. No. 829,317
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—276 **4 Claims**

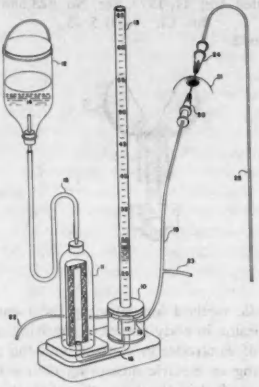
1. An ophthalmic procedure for an eye affected by glaucoma comprising the steps of:

measuring the intraocular pressure of the eye;

providing a first hypodermic needle and a reservoir of treatment fluid;

inserting a spring-biased diaphragm pressure regulator between said reservoir and said hypodermic needle and communicating said resevoir with said needle to provide a predetermined regulated pressure at said hypodermic needle;

increasing the bias on said diaphragm to increase the pressure at said hypodermic needle to the measured value in the eye;



inserting said first hypodermic needle in the eye; providing a bleed off fluid means from the eye by inserting into the anterior chamber of the eye a second hypodermic needle communicating with a tube to provide a control leak-off path for excessive pressure and

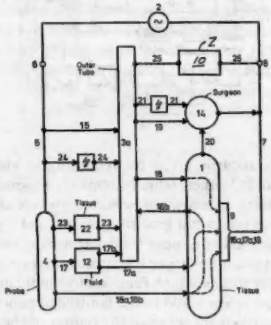
decreasing the bias on said diaphragm to provide a nominal normal pressure at said first hypodermic needle.

4,184,492

SAFETY CIRCUITRY FOR HIGH FREQUENCY CUTTING AND COAGULATING DEVICES

Hans H. Meinke, Gauting; Gerhard Flachenecker, Ottobrunn; Karl Fastenmeier; Friedrich Landstorfer, both of Munich, and Heinz Lidenmeier, Planegg, all of Fed. Rep. of Germany, assignors to Karl Storz Endoscopy-America, Inc., Los Angeles, Calif.

Continuation of Ser. No. 709,609, Jul. 29, 1976. This application May 30, 1978, Ser. No. 910,963
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1975, 2535341
Int. Cl.[2] A61B *17/36*; A61N *3/02*
U.S. Cl. 128—303.14 **20 Claims**



1. In combination: apparatus for the surgical cuttting and/or coagulation of tissue, said apparatus being adapted to utilize high frequency electrical currents derived from a generator of high frequency electrical current, said generator having a first and a second output contact, said apparatus including an outer

tube whose outer surface is at least partially made of metallic conductive material intended in use to be in conductive contact with tissue inside the human body, a conductive probe functioning as an electrode supported by, but insulated from, the conductive portions of said outer tube, a second electrode detached from said outer tube and probe and intended to remain outside the human body in conductive contact with said human body, a first conductive lead means for interconnecting the first contact to the probe, and second conductive lead means for connecting the second contact to the second electrode; and safety circuit means conductively interconnecting the said metallic conductive material of said outer tube to said second conductive lead means, said safety circuit means providing an impedance not less than about 100 ohms, whereby said outer tube functions at a voltage intermediate between said contacts during normal operation as a consequence of current flow from said probe to said outer tube.

4,184,493

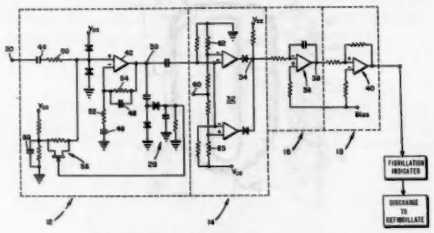
CIRCUIT FOR MONITORING A HEART AND FOR EFFECTING CARDIOVERSION OF A NEEDY HEART

Alois A. Langer, Pittsburgh; Marlin S. Heilman, Gibsonia, both of Pa.; Morton M. Mower, Baltimore, Md., and Mieczyslaw Mirowski, 2405 Velvet Valley Way, Owings Mills, Md. 21117, assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Continuation-in-part of Ser. No. 620,025, Sep. 30, 1975, abandoned. This application Feb. 15, 1978, Ser. No. 878,006

Int. Cl.[2] A61N *1/36*

U.S. Cl. 128—419 D **16 Claims**



1. A circuit for detecting the state of a heart by monitoring the continuous time average of the ratio of high slope to low slope ECG segments and for effecting cardioversion if a malfunction is indicated by such time average ratio exceeding a predetermined threshold, the circuit comprising: ECG monitor means for sensing ECG signals from a heart; signal shaping means for generating the slope of the sensed ECG signals by providing an approximation of the derivative of the input ECG; means for discriminating between high slope and low slope segments; averaging means for continuously time averaging the ratio of high slope to low slope segments; threshold means for determining whether such time average ratio of high slope to low slope segments is within predetermined threshold limits indicative of normalcy; and means for effecting cardioversion if said ratio is outside said threshold.

4,184,494

FEMININE PERFORMANCE COSTUME GARMENT

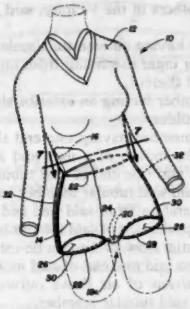
Leroy A. King, Jr., York, Pa., assignor to Tighe Industries, East Prospect, Pa.

Filed Sep. 22, 1978, Ser. No. 944,912

Int. Cl.[2] A41C *1/00*

U.S. Cl. 128—519 **25 Claims**

1. A feminine performance costume garment for feminine attiree use in various athletic or cultural performance events and presentations structurally adapted to prevent undergarment exposure in the crotch area of the feminine wearer thereof during attired use therein, said performance costume garment comprising in combination an exterior stylistic costume garment having a neck opening, a set of arm openings, and a set of leg openings of equal length respectively interposed vertically at a relative body position between the crotch and knees of a feminine attiree therein; a unitarily constructed panty brief undergarment having a waist band and a set of leg openings of a length corresponding to that of said exterior stylistic costume garment said undergarment being inserted and oriented to attiree body position within said exterior garment wherein also each of the leg openings of each set respectively in each of said exterior and under garments are conformed peripherally for finishing; a combined finished leg opening hem respectively for each conformed peripheral exterior and under garment leg opening combination said hem respectively formed by a peripheral enclosable tucking respectively of each undergarment leg opening respectively with an



excess of leg opening material of said exterior garment followed by stitching thereabout interior of the terminal peripheral combined leg opening edges thereof thus formed to thereby integrally communicate the respective exterior and under garment leg opening structures respectively one to the other; a set of exterior and under garment communicating stitchings inwardly disposed outwardly lateral of said performance costume garment and vertically disposed in parallel relationship one to the other interposed respectively between said combined finished leg opening hems and said undergarment waist band such that upon attired use by one wearing said feminine performance costume garment the respective exterior and under garment leg openings thereof move together unitarily thereby preventing undergarment exposure in the crotch area of the feminine attiree during performance and presentation use therein.

4,184,495

PROCESS FOR INCORPORATING FLAVORANT INTO CELLULOSIC SUBSTRATES AND PRODUCTS PRODUCED THEREBY

Norman B. Rainer, and Peter A. Wilson, both of Richmond, Va., assignors to Philip Morris, Inc., New York, N.Y.

Division of Ser. No. 674,613, Apr. 7, 1976, Pat. No. 4,123,592. This application Jun. 29, 1978, Ser. No. 920,631

Int. Cl.[2] A24D *1/00, 1/02*

U.S. Cl. 131—9 **1 Claim**

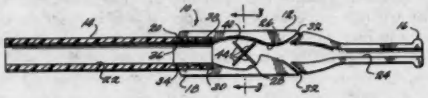
1. An improved stable, flavored unitary smoking article comprising a tubular paper wrapper enclosing a tobacco or tobacco-substitute filler wherein at least the tipping portion of the wrapper contains from about 0.2% to 2.0% of a volatile flavorant based on the dry weight of the wrapper which is physically entrapped by and in physical contact with the wrapper structure and is not released therefrom until the wrapper is contacted with either heat or moisture.

4,184,496

AIR MOVING SIMULATED CIGARETTE DEVICE

Virginia M. Adair, 1080 W. Paces Ferry Rd., NW., Atlanta, Ga. 30327

Filed Feb. 23, 1978, Ser. No. 880,622
Int. Cl.[2] A24D 47/00; A61M 15/06; A63J 3/00, 5/00
U.S. Cl. 131—170 A 6 Claims



1. A device for enabling a user while simulating the action of smoking a cigarette or cigar, to circulate the air surrounding his nose and mouth which may be laden with actual cigarette or cigar smoke of others in the vicinity, said device comprising:

a tubular member having an exterior simulating the exterior of a cigarette or cigar extending from one end thereof to an opposite end thereof,

a mouthpiece member having an exterior simulating a cigarette or cigar holder,

said mouthpiece member having one end shaped to be engaged within the mouth of a user and an opposite end connected with said one end of said tubular member,

said mouthpiece and said tubular member having a continuous passage extending from said one end of said mouthpiece to said opposite end of said tubular member through which a substantial flow of air can be established by the user blowing into said one end of said mouthpiece so that a substantial current of air flows outwardly from said opposite end of said tubular member,

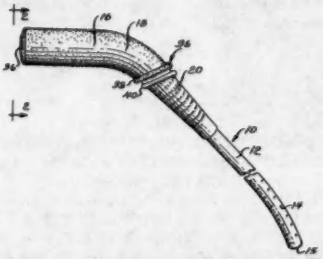
said mouthpiece having air aspirating passage means extending from the exterior thereof into aspirating relation with said passage so that when a substantial flow of air is established within said passage as aforesaid, said flow will aspirate additional air through said air aspirating passage means.

4,184,497

PERITONEAL DIALYSIS CATHETER

Willem J. Kolff, and Thomas R. Kessler, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Aug. 26, 1977, Ser. No. 828,019
Int. Cl.[2] A61M 5/00, 25/00
U.S. Cl. 131—213 A 6 Claims



1. An implantable catheter which comprises a tubular member adapted for long-term residence in the peritoneal cavity, said tubular member carrying at one end thereof an enlarged, hollow member made of a physiologic material capable of being resealingly needle-pierced for the transfer of dialysis solution to and from the implanted catheter and the peritoneal cavity; a helical spring member embedded within the wall of said enlarged, hollow member to prevent the collapse thereof after implantation and during insertion of a needle therein; said catheter defining a first bend adjacent the enlarged, hollow member, and a second bend adjacent said first bend but spaced from it and positioned more centrally of the catheter than said first bend, said first bend having a relatively larger radius of curvature than said second bend, the second bend defining a plane which, in turn, defines a generally right angle to the plane defined by the first bend, whereby said catheter may be implanted with the enlarged, hollow member being subcutaneously placed to extend horizontally under the skin of the abdomen of a patient when erect, the first bend directing said catheter inwardly of a patient, and a second bend directing the catheter downwardly through the peritoneal cavity, between said first and second bends, porous cuff means attached to said catheter for suturing to the stomach wall, said porous cuff means permitting sealing tissue ingrowth into the cuff means.

4,184,498

SANITARY NAPKIN

Pierre Franco, Plateau St. Jean, Rascas 81, Castres, France

Filed Apr. 8, 1977, Ser. No. 785,908
Claims priority, application France, Jun. 14, 1976, 76 17963
Int. Cl.[2] A61F 13/16
U.S. Cl. 128—290 R 11 Claims

1. A disposable sanitary napkin comprising an absorbent structure, an outer, impermeable film and an inner, permeable covering, said absorbent structure comprising a main absorbent pad which is formed by compacting an absorbent material to impart to it a generally oblong shape having front and rear ends, two side swellings projecting on the inner covering side, joining at the front and rear of the napkin and connected together by a thinner central portion whose density of compaction is higher than that of said side swellings, said main absorbent pad having in section the form of an open U conferring anatomical shape to the napkin and allowing the menstrual flow absorbed in the thinner central portion to pass into the side swellings.

4,184,499

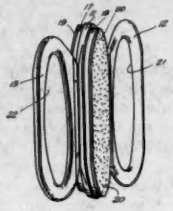
DEVICES WITH TWO WORKING SURFACES

David Seidler, Forest Hills, N.Y., assignor to Revlon, Inc., New York, N.Y.

Filed Nov. 28, 1977, Ser. No. 855,422
Int. Cl.[2] A45D 29/04
U.S. Cl. 132—75.6 2 Claims

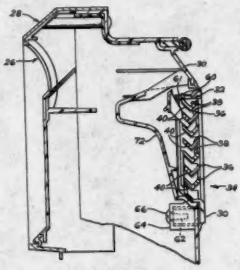
1. A device for use as a buffer, massager or applicator comprising a frame to which are integrally attached opposing handles along living, reversible hinges, a backing element

inside said frame and integrally attached thereto, a pair of supporting elements on each side of the backing element and



secured thereto, and, a buffing, massaging or applicator material covering each backing element.

4,184,500
DISHWASHER VENT CLOSING ARRANGEMENT
LeRoy J. Herbst, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Jul. 31, 1978, Ser. No. 929,462
Int. Cl.[2] B08B *3/00*
U.S. Cl. 134—114 **5 Claims**



3. In a dishwasher of the type including a dishwasher cabinet having an interior space therein, means for mounting dishware items in said interior space and means for directing wash and rinse water sprays at said dishware items mounted therein, means for drying said dishware items by heating the interior space of said dishwasher cabinet and a vent opening formed in said cabinet establishing communication of the interior of said cabinet with the exterior of said dishwasher cabinet, in combination, a vent closure arrangement comprising:

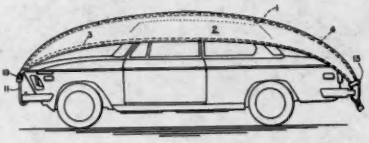
a vertically spaced series of laterally extending ribs mounted in said opening, each of said ribs being trough-shaped to define a liquid retention channel extending along the length of each rib with the lower portion of each rib extending to or below the uppermost level of said liquid retention channel defined by the next succeeding lower rib in said series;

means for controllably filling each of said liquid retention channels with said wash and rinse water during said wash and rinse cycles including means disposing said ribs so as to be filled with water overspray during wash and rinse cycles;

means for controllably emptying each of said liquid retention channels of wash water upon termination of said wash and rinse cycles including means continuously draining said liquid retention channels, whereby upon termination of said wash and rinse cycles, said liquid retention channels are emptied by the continuous draining thereof and replenished by said wash and rinse water overspray to thereby control communication of the interior of said dishwasher cabinet space with the exterior thereof during said wash and rinse cycles;

whereby said vent opening is sealed during said wash and rinse cycles by water disposed in said liquid retention channels and said vent opening to allow venting of the interior of said dishwasher cabinet after termination of said wash and rinse cycles by the emptying of said wash and rinse water from said liquid retention channels.

4,184,501
SOLAR SHIELD
Bernard L. Johnson, 6431 Girvin Dr., Oakland, Calif. 94611
Filed May 30, 1978, Ser. No. 910,525
Int. Cl.[2] A45F *1/16*
U.S. Cl. 135—1 A **6 Claims**



1. The solar shield for a vehicle comprising

a covering of foldable material characterized by capability of reflecting the heat of the sun,

collapsible spacing means to space the said covering from the body of a vehicle to be covered, and

securing means to secure said spacing means to the body of the vehicle,

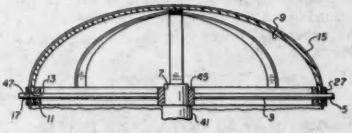
said collapsible spacing means comprising

a plurality of transversely spaced braces, extending longitudinally of the shield,

longitudinally telescoping flexible arcuate, sections forming each brace,

and an element at each end of the spacing means to hold the respective adjacent ends of the outermost telescoping sections together.

4,184,502
SHADE APPARATUS
Byron Anderson, Jr., P.O. Box 1124, Highlands, Tex. 77502
Filed Aug. 10, 1978, Ser. No. 932,439
Int. Cl.[2] A45B *15/00, 23/00*
U.S. Cl. 135—20 R **5 Claims**



1. In a weather protector means adapted to be assembled and disassembled respectively before and after each use thereof from a plurality of component disassembled parts comprising:

a plurality of intersecting ribs extending radially outward from the point of intersection, each of said ribs carrying connection means at the terminal ends thereof,

elongate cross members characterized by opposing ends, each end coupled to opposing ones of said connection means at the ends of said ribs,

a flexible cover disposed over said cross members and affixed at said connection means and, a circumferential belt engaging each of said connection means for clamping said flexible covering means to the surface of said cross members.

4,184,503

CRUTCH

Kotaro Nakajima, 7, Junikencho, Higashi-ku, Osaka, Japan

Filed Jul. 26, 1978, Ser. No. 928,064

Claims priority, application Japan, Jul. 28, 1977, 52-101380[U]

Int. Cl.[2] A61H 3/02

U.S. Cl. 135—68 9 Claims

1. A crutch comprising an elongated upper portion and an elongated lower portion; connecting means for pivotally connecting the adjacent ends of the upper and and lower portions to each other about a pivot axis extending substantially in the breadth-wise direction of the crutch and substantially at a right angle to the longitudinal axis of the crutch, the connecting means including a pair of spaced U-shaped portions formed at the end of either one of the upper and lower portions, a pair of spaced projections formed at the end of the other of the upper and lower portions, each of said projections being adapted to be received within a groove defined by legs of the corresponding U-shaped portion, through bores formed in mutual alignment in the U-shaped portions and the projections, and a rod extending through the through bores so that U-shaped portions and the projections are pivotally connected to each other; and locking means for locking the upper and lower portions against pivotal movement, in such a stretched state that the lower portion is linearly extended from the upper portions, the locking means including a pair of operating plates slidably held on the rod between the U-shaped portions, locking pins parallel to the rod and rigidly secured on the operating plates, respectively, first locking bore formed in each of the U-shaped portions parallel to the rod, and second locking bore formed in each of the projections, the first and second locking bores being adapted to register and to receive one of the locking pins when the upper and lower portions are aligned with each other.

4,184,504

WELLHEAD VALVE REMOVAL AND INSTALLATION TOOL

James T. Carmichael, Shreveport; Robert J. Diehl, Vivian, and William L. Godare, Shreveport, all of La., assignors to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Dec. 12, 1977, Ser. No. 859,402

Int. Cl.[2] F16L 55/12; F16K 43/00

U.S. Cl. 137—15 19 Claims

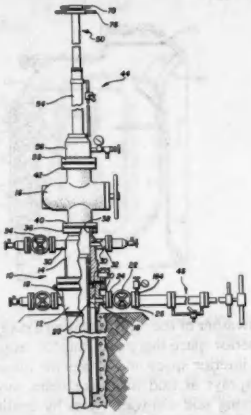
1. A tool adapted to be positioned against the outlet end of a valve on an operating wellhead assembly under pressure for removing and replacing the valve with the tool being in longitudinal alignment with the flowline in which the valve is positioned;

said tool having an outer elongated housing carrying a sealing and latching mechanism and an operating mechanism releasably connected to the sealing and latching mechanism;

said sealing and latching mechanism adapted to be positioned in the flowline upstream of the inlet end of the valve and having an outwardly movable latch member for holding the sealing and latching mechanism in a fixed position within the flowline upstream of the valve, said sealing and latching mechanism having a radially expanding elastomeric sealing element adjacent the latch member for engaging the inner circumference of the flowline in a fluid-tight sealing relation upstream of the inlet end of the valve to be removed;

said operating mechanism being manually operated through the housing adjacent the valve to be removed and operatively connected to the sealing and latching mechanism for selectively expanding the sealing element outwardly into sealing engagement with the flowline and for selectively moving the latch member outwardly for retaining the sealing and latching mechanism in fixed position within the flowline, said operating mechanism being released from said sealing and latching mechanism after actuation of said sealing and latching mechanism to permit removal of the valve;

said sealing and latching mechanism including a hollow generally cylindrical body member, a body end member longitudinally slidably mounted with said body member at one end portion thereof, a threaded connector member inside the body member and threadedly mounted with the body end member, and the sealing element comprises a packing ring mounted between a peripheral abutment around said body



member and a peripheral abutment around said body end member, said connector member being operable upon rotation in one direction by said operating mechanism to move said body end member toward said body member thereby longitudinally compressing and radially expanding said packing ring, said connector member being operable upon rotation in the opposite direction by said operating mechanism to move said body end member away from said body member thereby releasing said packing ring; and

said sealing and latching mechanism including a plurality of radially movable latch members mounted with said body member, and a latch displacing member mounted on said connector member to move said latch members radially outwardly upon movement of said connector member to compress said packing ring to latch said sealing and latching mechanism in said flowline.

5. A tool adapted to be positioned against the outlet end of a valve on an operating wellhead assembly under pressure for removing and replacing the valve with the tool being in longitudinal alignment with the flowline in which the valve is positioned;

said tool having an outer elongated housing carrying a sealing and latching mechanism and an operating mechanism releasably connected to the sealing and latching mechanism;

said sealing and latching mechanism adapted to be positioned in the flowline upstream of the inlet end of the valve and having an outwardly movable latch member for holding the sealing and latching mechanism in a fixed position within the flowline upstream of the valve, said sealing and latching mechanism having a radially expanding elastomeric sealing element adjacent the latch member for engaging the inner circumference of the flowline in a fluid-tight sealing relation upstream of the inlet end of the valve to be removed;

said operating mechanism being manually operated through the housing adjacent the valve to be removed and operatively connected to the sealing and latching mechanism for selectively expanding the sealing element outwardly into sealing engagement with the flowline and for selectively moving the latch member outwardly for retaining the sealing and latching mechanism in fixed position within the flowline, said operating mechanism being released from said sealing and latching mechanism after actuation of said sealing and latching mechanism to permit removal of the valve;

said operating mechanism having an outer actuating member operatively connected to the sealing element for selectively expanding the sealing element into fluid-tight sealing relation with the flowline and an inner actuating member operatively connected to the latch member for selectively actuating the latch member independently of the sealing element;

said housing having a portion thereof enclosing an intermediate portion of the outer actuating member and forming a fluid cylinder around said intermediate portion, said outer actuating member having a piston secured thereto within said cylinder; and

means to apply fluid pressure to opposite sides of said piston for moving said outer actuating member between extended and retracted positions.

4,184,505

FUEL FLOW RATE MEASURING DEVICE

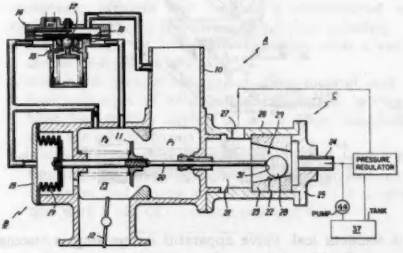
Kei Kimata, Aichi; Yoshinobu Yasuda, Iwata; Isamu Yoshida, Iwata, and Masahiro Saruta, Iwata, all of Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka, Japan

Filed Apr. 5, 1978, Ser. No. 893,681

Claims priority, application Japan, Apr. 5, 1977, 52/42899[U]; May 6, 1977, 52/57857[U]; May 7, 1977, 52/57653[U]

Int. Cl.² G05D *11/00*

U.S. Cl. 137—117 **8 Claims**



1. A fuel flow rate measuring device comprising a flow rate measuring section which is composed of a body having a bore whose cross-section is not uniform in the longitudinal direction, a fuel inlet communicating with said bore and a fuel outlet communicating with said bore, and a ball placed in said bore; a control rod, the clearance between said bore and ball being adjustable in accordance with an axial movement of said control rod; and a pressure regulator communicating with said fuel inlet and outlet for keeping constant the pressure difference between said inlet and outlet sides, the arrangement being such that the axial position of said control rod and the rate of flow of the fuel correspond to each other in a fixed relation.

4,184,506

VACUUM SEWER SYSTEM

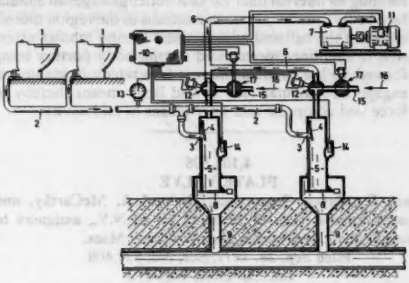
Martti Varis, Kirvuntie 53, 02140 Espoo 14, and Krister Nordberg, 64230 Närpiö as., both of Finland

Continuation of Ser. No. 535,853, Dec. 23, 1974, abandoned. This application Mar. 18, 1976, Ser. No. 668,262

Claims priority, application Finland, Dec. 29, 1973, 4043/73

Int. Cl.² C02C *1/00*

U.S. Cl. 137—205 **10 Claims**



1. A vacuum sewer system comprising a plurality of sewage producing units, a sewer pipe system with sewage conveying pipe being under normal working conditions constantly under partial vacuum and being connected to said units and arranged to convey sewage from said units to a discharge unit, each discharge unit having only a single sewage collecting chamber with a bottom having a gravity operated discharge means of check valve type, each outlet end of a sewage conveying pipe of said sewer pipe system being connected through a check valve directly to the upper portion of said single collecting chamber of one of said discharge units, a pump connected to said collecting chamber for producing a partial vacuum in said collecting chamber, and means for releasing at intervals the vacuum produced by said pump in said collecting chamber for allowing discharge of the sewage collected therein.

4,184,507

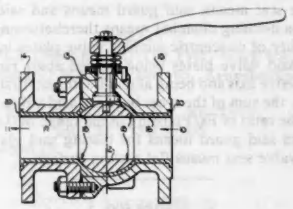
BALL VALVE

Cecil G. Richards, Aspley, Australia, assignor to B. C. Richards & Co. Pty. Ltd., Geebung, Australia

Filed Apr. 20, 1978, Ser. No. 898,440

Int. Cl.² F16K *27/00, 5/06*

U.S. Cl. 137—375 **2 Claims**



1. A ball-valve of the type having:

a first body portion;

a ball chamber in said first body portion;

an inlet passage in said first body portion, leading to said ball chamber;

a second body portion releasably mounted on said first body portion on the oposite side of said ball chamber to said inlet passage;

a outlet passage in said second body portion leading to said ball chamber;

a diametrically apertured ball in the ball chamber;

means for rotating the ball to open or close the way from the inlet passage to the outlet passage;

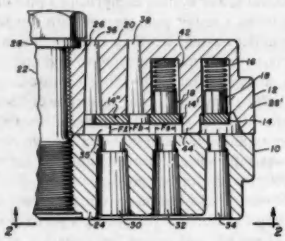
replaceable resilient liner means encasing the ball and filling a cavity in said ball chamber around said ball between said body portion and said rotating means, said liner means including a first tubular extension forming an internal liner for said inlet passage, and a second tubular extension forming an internal liner for said outlet passage; an annular face being formed on said liner means in the region thereof encasing the ball and adjacent said second tubular extension of said liner means, said second body portion being formed with an annular mating face which is adapted to engage said annular face of said lliner means thereby to force and compress said liner means in said cavity.

4,184,508

PLATE VALVE

Thomas E. Mayer, Tonawanda; Richard A. McCarthy, and George Yokota, both of Amherst, all of N.Y., assignors to Worthington Compressors, Inc., Holyoke, Mass.

Filed Sep. 28, 1977, Ser. No. 837,408
Int. Cl.[2] F16K *15/08*
U.S. Cl. 137—512.1 **6 Claims**



1. A plate valve including:

valve seat means, said valve seat means having a flat seating surface and a first plurality of circumferentially arranged ports of arcuate shape spaced apart radially about an axis of the valve and intersecting said flat seating surface, the width of the ports of said first plurality varying, said first plurality of ports having a total effective flow area of Fs;

guard means coupled to said valve seat means, said guard means having a second plurality of circumferentially arranged ports of arcuate shape spaced apart radially about said valve axis and offset with respect to said ports in said valve seat means, said guard means and said valve seat means defining chamber means therebetween;

a plurality of concentric annular valve plates in said chamber, said valve plates being spaced apart radially about said valve axis and being aligned with said first plurality of ports, the sum of the areas between said valve plates being Fb, the ratio of Fs/Fb being in the range of 0.4 to 0.8; and

means in said guard means for biasing said plates towards said valve seat means flat seating surface.

4,184,509

VACUUM RELIEF AND ACCESS DOOR ASSEMBLY

Gordon Kasper, Harrisonville, Mo., assignor to Ruskin Manufacturing Company, Grandview, Mo.

Filed Nov. 1, 1978, Ser. No. 956,586
Int. Cl.[2] F16K *15/02*
U.S. Cl. 137—526 **11 Claims**

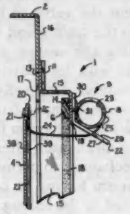
1. A vacuum relief and access door assembly for use on a duct having an access opening in a wall thereof, comprising:

(a) a door mounting frame sealingly attached to a duct wall and defining a door opening communicating with a duct; said frame having abutment portions with edges spaced outwardly from the frame away from the duct and rear surfaces facing laterally outward from the door opening;

(b) sealing means mounted on said door frame and facing said duct;

(c) an access door for positioning on the duct side of the door frame; and

(d) mounting means for releasably mounting the access door on the duct side of the door frame in sealing engagement



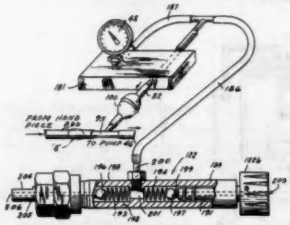
with said sealing means, said mounting means comprising at least two flat spiral coil springs on opposite sides of the door opening and with end portions secured relative to the door and coils having a plurality of convolutions releasably engaged over the edges of the abutment portions and with said rear surfaces, and operable to pay out said springs from the coils in response to negative pressure in said duct to permit said access door to temporarily displace from said seating engagement for relief of said negative pressure and return into sealing engagement.

4,184,510

VALUED DEVICE FOR CONTROLLING VACUUM IN SURGERY

Edward J. Murry, Palos Park, and Joseph F. Brumbach, Niles, both of Ill., assignors to Fibra-Sonics, Inc., Chicago, Ill.

Division of Ser. No. 777,582, Mar. 15, 1977. This application Mar. 17, 1978, Ser. No. 887,716
Int. Cl.[2] F16K *15/04*; A61B *17/32*
U.S. Cl. 137—565 **3 Claims**



1. A vacuum leak valve apparatus comprising, a vacuum pump, a medical handpiece, a first conduit connected between said vacuum pump and said medical handpiece, a second conduit with one end connected to said first conduit between said vacuum pump and said medical handpiece, a double leak valve having a central longitudinal passage connected to the second end of said second conduit, said double leak valve comprising a hollow body member with a center portion having a pair of shoulders, said second end of said second conduit connected to said hollow body member so as to be in fluid communication with said central longitudinal passage, a first spring with one end mounted against one of said shoulders, a first ball mounted against the other end of said first spring, a first stem with a passage therethrough to atmosphere and a first valve seat against which said first ball rests threadedly attached to said

hollow body member to set a limiting first pressure, a second spring with one end mounted against the other of said shoulders, a second ball mounted against the other end of said second spring, a second stem with a passage therethrough to atmosphere and a second valve seat against which said second ball rests formed on said stem and said stem threadedly attached to said hollow body member to set a limiting second pressure so as to assure that the pressure within said second conduit and said handpiece does not exceed either said first or second limiting pressures.

4,184,511

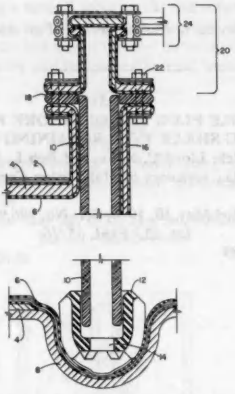
CORROSION-RESISTANT SIPHON ASSEMBLY

James. Wilson, 18579 Martinique Dr., Houston, Tex. 77058

Filed Jun. 19, 1978, Ser. No. 917,086

Int. Cl.[2] B65D *87/24;* F16L *11/08*

U.S. Cl. 137—590 **6 Claims**



1. An assembly for conveying and discharging corrosive fluids, comprising:

a substantially closed receptacle containing a corrosive fluid and exit aperture; and,

a non-metallic corrosive resistant tubular member extending through said aperture into said fluid contained in said receptacle, wherein said member is multilayered with each layer having a plurality of sub-layers including

a first sub-layer of resin in combination with a veil of corrosive-resistant fabric,

a second sub-layer of chopped matting material, and

a third sub-layer of unidirectional fiberglass, having its fiberglass strands applied in a direction longitudinal with the tubular form;

said sub-layers applied alternatively one on the other, thus forming a multilayered member having a predetermined thickness, and having a final layer of resin in combination with a veil of corrosion-resistant fabric.

4,184,512

FLUID DISTRIBUTING DEVICES, PARTICULARLY FOR HYDRAULIC REMOTE CONTROL

Louis Pignolet, Lyons, France, assignor to Rexroth-Sigma, Venissieux, France

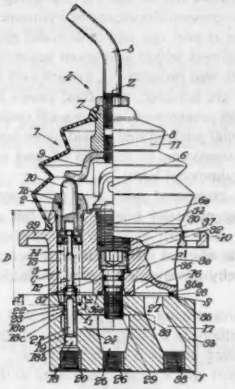
Filed Nov. 30, 1977, Ser. No. 856,127

Claims priority, application France, Jan. 6, 1977, 77 00255

Int. Cl.[2] F15B *13/08*

U.S. Cl. 137—596 **10 Claims**

1. A fluid distributing device particularly for remote control comprising at least one calibration modifiable pressure reducer mounted in a body and a control member, such as a lever, capable of modifying the calibration of the reducer, which reducer comprises a plunger movable in a cavity of the body, this cavity comprising, on one side, a housing in which are placed the reducer calibrating means, this housing being connected to a low-pressure fluid zone and, on the other side, a bore in which an active part of the plunger can be moved, this active part controlling the pressure of the fluid at an outlet aperture located in the axial extension of the bore, said active part comprising a blind axial hole opening into the bore on the side of said aperture, and at least a transverse aperture provided, in the vicinity of the bottom of the blind hole, to communicate this hole with the outside surface of the active part, the transverse aperture being able to cooperate with a shoulder of the bore, which comprises, particularly, at the shoulder, precision machined surfaces for cooperating with the plunger, the part of the cavity of the distributor body located, with



respect to this shoulder, on the side opposite the outlet aperture communicating with the low-pressure fluid zone, whereas the part of the bore located, with respect to the shoulder, on the side of the outlet aperture comprises a groove connected to a central pressurised fluid inlet, characterised by the fact that the body of the distributor is formed from two parts, independent of each other and connected by assembly means, these two parts being separated by a surface transversely directed in relation to the bore, this separation surface passing through the housing connected to the low-pressure zone and being located, in relation to said shoulder, on the side opposite the outlet aperture, said surface being, furthermore, located in the vicinity of one end of said bore so that before assembly of the two parts access to the bore is easy, particularly for machining operations on surfaces of this bore.

4,184,513

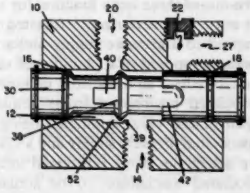
MULTIPLE THREE AND/OR TWO WAY VALVE

Roland W. Bonney, R.F.D. 1 Box 65, Kennebunkport, Me. 04046

Filed Jan. 31, 1979, Ser. No. 7,910

Int. Cl.[2] F15B *13/06*

U.S. Cl. 137—596.12 **8 Claims**



1. A valve comprising:

a valve housing;

a cylindrical bore defined in said valve housing;

an inlet port defined in said valve housing communicating into said cylindrical bore adapted to allow the entrance of hydraulic fluid into said cylindrical bore;

a tank outlet port defined in said valve housing communicating into said cylindrical bore adapted to allow the escape of hydraulic fluid from said cylindrical bore;

at least one pressure-on, pressure-off outlet defined in said valve housing communicating into said cylindrical bore;

a spool member axially slidable and rotatable within said cylindrical bore;

a blocking ring member extending around and projecting from said spool member;

seal means defined within said valve housing adapted when activated to prevent the escape of hydraulic fluid entering from said inlet port out said tank outlet port;

feed means defined within said spool adapted so that when aligned with said pressure-on, pressure-off outlet and said seal means are actuated, said fluid passes from said inlet port out said pressure-on, pressure-off outlet;

at least one relief port defined in said valve housing disposed in a plane transverse to the axis of, and communicating into, said cylindrical bore;

check means associated with said relief port, said check means being normally biased closed but adapted to be opened;

opening means adapted when activated to open said check means thereby allowing the entry of fluids through said relief port;

at least one pressurizing port defined in said valve housing disposed radially in a plane transverse to the axis of, and communicating into, said cylindrical bore;

pressurizing port check means associated with said pressurizing port being normally biased closed, but adapted to be opened, said pressurizing port adapted to be operated when said seal means is activated, and said feed means aligned with said pressurizing port thereby causing the hydraulic pressure within said cylindrical bore to escape through said pressurizing port;

a channel connecting said pressurizing port to said relief port; and

an operating outlet port communicating with each of said pressurizing ports for connecting with a device to be operated by said valve.

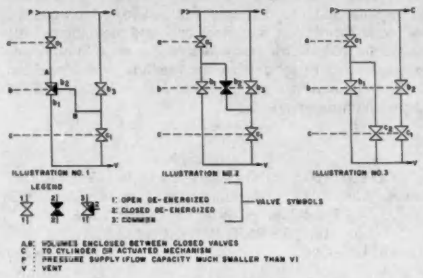
4,184,514

VALVE SYSTEM INCORPORATING SINGLE FAILURE PROTECTION LOGIC

Rodger Ryan, San Jose, and Walter J. H. Timmerman, Saratoga, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 11, 1978, Ser. No. 868,634
Int. Cl.[2] G21C *17/00*
U.S. Cl. 137—861 **5 Claims**

1. A valve system utilizing three independent input signals combined in a two-out-of-three logic function for actuation of de-actuation of a normally pressurized associated mechanism operatively connected to a pressure supply and a vent, comprising: valve means composed of a plurality of valve assemblies positioned intermediate an associated pressure supply, a vent, and an associated mechanism to be actuated or de-actuated; a first pair of said valve assemblies being positioned intermediate an associated pressure supply and a vent, a second pair of said valve assemblies being positioned intermediate a vent and an associated mechanism to be actuated or de-actuated; valve actuation/de-actuation signals a, b, and c, for actuation/de-actuation of said valve means; and means for initiating said signals a, b, and c; whereby failure of one of signals a, b, and c, or failure of a corresponding valve assembly



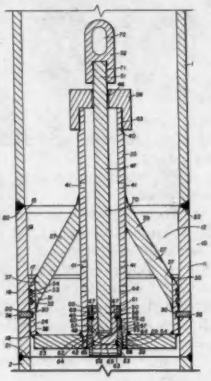
will neither prevent nor cause action of an associated mechanism.

4,184,515

RETRIEVABLE PLUG FOR OFFSHORE PLATFORMS HAVING SHEAR TYPE RETAINING MEANS

Steven G. Streich; Lloyd C. Knox, and Bob L. Sullaway, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 18, 1978, Ser. No. 906,900
Int. Cl.[2] F16L *55/10*
U.S. Cl. 138—89 **4 Claims**



1. A plug for sealing the interior of a hollow cylindrical member to prevent the flow of fluid therethrough, said plug comprising:

a central body member releasably secured to said hollow cylindrical member by shear pin means having a portion thereof engaging said central body member, said central body member sealingly engaging the interior surface of said hollow cylindrical member, said central body member including:

circular plug means having a central opening therein;

annular wall means secured to the outer periphery of said circular plug means having aperture means located in the outer surface thereof extending through a portion of the thickness of said annular wall means receiving said portion therein of said shear member means and having seal means located in the outer surface thereof; and

cylindrical body means secured about the periphery of the central opening of said circular plug means; and

pressure equalization means for allowing the pressure of said

fluid to equalize across said central body member before the removal thereof from said hollow cylindrical member to allow the flow of said fluid through said hollow cylindrical member, said pressure equalization means including:

sleeve means secured within said cylindrical body means of said central body means in sealing engagement therewith;

plug means releasably secured to said sleeve means in sealing engagement therewith; and

rod means secured to said plug means to release said plug means from said sleeve means when a first force is applied to said rod means

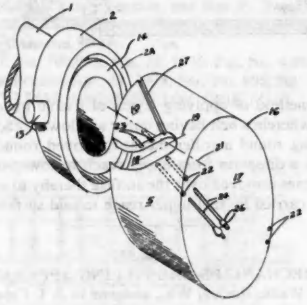
whereby the plug means are released from sealing engagement with the sleeve means by applying a first force to the rod means thereby allowing the flow of said fluid through said cylindrical body means and said plug is released from sealing engagement with said hollow cylindrical member by applying a second force to the rod means, the second force having a magnitude greater than the first force applied to the rod means thereby allowing the removal of said plug from said hollow cylindrical member.

4,184,516

PIPE CAP

Richard B. Oesterritter, 129 S. Bayly Ave., Louisville, Ky. 40206, and Edward M. Steutermann, 13305 Laurel Ct., Prospect, Ky. 40218

Filed May 22, 1978, Ser. No. 908,504
Int. Cl.² B65D *59/06*
U.S. Cl. 138—96 R **8 Claims**



1. A security cap to be attached to a union nut of a piping union where the union nut is provided with at least one radially outwardly extending post means where the cap includes:

(a) A cylinder of friable material of selected wall thickness and length along the longitudinal axis thereof, defining an internal chamber of selected diameter at least as great as the maximum outer diameter of the union nut, where one open end of said cylinder is adapted to receive said union nut elongate slot means having a width adapted to receive the post means of said union nut being cut through the sidewall of the cylinder means, said slot means having an open end at said open end of said cylinder means, and wherein said slot means extends longitudinally of said cylinder as well as in a direction parallel to a line obliquely intersecting a line drawn through said cylinder parallel to the longitudinal axis thereof;

(b) Cover means to substantially cover the end of said cylinder opposite said open end; and

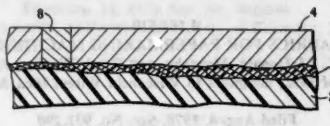
(c) Pin means with cooperative pin receiving means carried by said cylinder means to retain said post means within said slot means.

4,184,517

LOCKED LINED PIPE AND METHOD FOR MAKING SAME

Kenneth J. Corey, Fullerton, Calif., assignor to Donald J. Lewis, Irvin, Calif.

Filed Jun. 5, 1978, Ser. No. 912,377
Int. Cl.² F16L *9/14*
U.S. Cl. 138—147 **8 Claims**



1. A lined pipe comprising:

an outer pipe;

an inner lining pipe provided within the outer pipe and extending substantially the entire length of the outer pipe; and

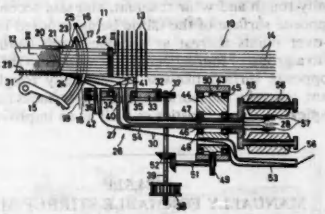
a plurarity of locking shims provided between the inner surface of the outer pipe and the outer surface of the inner lining pipe formed by injecting a resin into any voids between the inner service of the outer pipe and the outer surface of the inner lining pipe, letting the resin cure and jarring the line pipe to break the cured resin into small pieces which wedge between the outer surface of the inner lining pipe and the inner surface of the outer pipe whereby the inner lining pipe is locked to the outer pipe.

4,184,518

APPARATUS FOR MANUFACTURING A SLIDE FASTENER STRINGER HAVING A WOVEN COILED ELEMENT

Hiroshi Yoshida, Uozu, and Masaatsu Ofusa, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 25, 1978, Ser. No. 936,749
Claims priority, application Japan, Aug. 27, 1977, 52-102825
Int. Cl.² D03D *1/00, 41/00*
U.S. Cl. 139—35 **11 Claims**



1. An apparatus for manufacturing a slide fastener stringer including a stringer tape, woven of warp and weft threads, and a coiled fastener element woven into the stringer tape along a longitudinal edge thereof, comprising:

(a) means for weaving the stringer tape, said means including means for shedding warp threads and a filling carrier for inserting a weft thread through the warp shed;

(b) a mandrel for extending substantially along the warp threads, said filling carrier being reciprocable across said mandrel; and

(c) a rotor assembly for winding a monofilament around said mandrel to form the coiled fastener element woven into the tape by the weft thread, said rotor assembly comprising first and second spaced housings, first and second wheels rotatably mounted in said first and second housings, respectively, said first and second wheels having means for guiding the monofilament, first and second

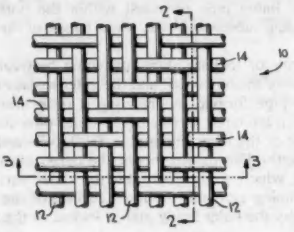
floating shafts around which said first and second wheels are rotatable, respectively, said mandrel being supported on said first shaft, means coupling said first and second shafts with their axes out of mutual alignment whereby said shafts are held nonrotatable during rotation of said wheels, and means for synchronously rotating said first and second wheels, said first wheel being locatable closer to the warp threads than said second wheel is.

4,184,519

FABRICS FOR PAPERMAKING MACHINES

Robert L. McDonald, Menasha, and Frank Biasone, Appleton, both of Wis., assignors to Wisconsin Wires, Inc., Appleton, Wis.

Filed Aug. 4, 1978, Ser. No. 931,290
Int. Cl.² D03D *15/00*; D21F *1/10*; B01D *39/10*
U.S. Cl. 139—425 A **5 Claims**



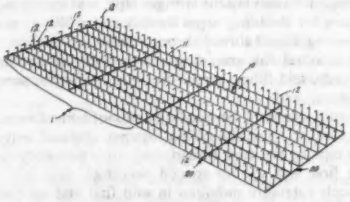
1. A papermaking fabric comprising interwoven first machine direction and second cross-machine direction strands, the improvement in which the fabric constitutes a five-shed weave pattern wherein at least said second strands are woven in a repetitive pattern of passing at cross-over points under at least three adjacent first strands and then passing at cross-over points over at least two next adjacent first strands so as to form a $\frac{3}{2}$ type weave pattern, said second strands at one surface of the fabric being exposed between said cross-over points thereat as knuckles each having a length equal to a group of five adjacent first strands to thereby render said one surface substantially rough and wear resistant, and said second strands at the opposite surface of the fabric being exposed between said cross-over points thereat as knuckles each having a length equal to a group of four adjacent first strands to thereby render said opposite surface likewise substantially rough and wear resistant, whereby the fabric at both said surfaces has improved paper pick-up characteristics as well as an improved working life.

4,184,520

MANUALLY FORMABLE STIRRUP MAT REINFORCEMENT AND PIPE REINFORCING METHOD BASED THEREON

Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

Filed Dec. 7, 1977, Ser. No. 858,103
Int. Cl.² B21F *27/20*
U.S. Cl. 140—107 **17 Claims**



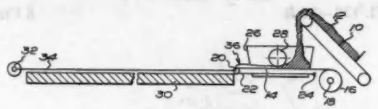
1. A method for preparing a reinforcing cage for concrete pipe wherein a cage is first formed to a desired configuration, the improvement in said method comprising: providing a stirrup mat having a plurality of generally parallel stirrup members, each including a plurality of stirrup projections projecting laterally therefrom, said stirrup members being interconnected by only a sufficient number of tie wires to give said mat dimensional stability whereby it can be handled, without collapsing, in various orientations including a generally horizontal orientation and can thereby be moved to and located at the area of the cage to be reinforced, said tie wires being sufficiently flexible that they can be manually bent into an arcuate curvature, but being sufficiently stiff that they make said dimensional stability possible; placing said mat adjacent a formed cage, manually forming said mat to the general curvature of said cage and securing it to said cage with said stirrup projections projecting generally radially away from the curved plane defined by the curvature of said cage.

4,184,521

APPARATUS FOR AND A METHOD OF APPLYING LAYERS OF FRIABLE MATERIAL

Paul J. Middlebrook, Selby, England, assignor to Monomech Developments Limited, South Kirkby, near Pontefract, England

Filed Nov. 29, 1976, Ser. No. 745,899
Claims priority, application United Kingdom, Nov. 29, 1975, 49151/75; Dec. 24, 1975, 52904/75
Int. Cl.² B65B *1/04*
U.S. Cl. 141—1 **8 Claims**



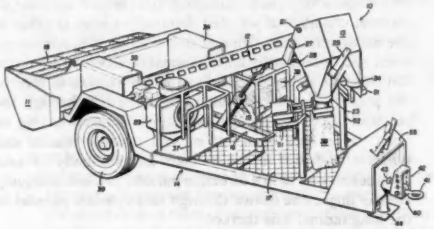
6. A method of applying layers of friable material over a surface wherein a belt having upper and lower reaches created by passing round a roller means is moved round the roller means in a direction from upper reach to lower reach as the roller means is moved over the surface thereby to apply friable material carried by said upper reach to said surface.

4,184,522

MECHANIZED BAG FILLING APPARATUS

Jerry A. Waite, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Aug. 28, 1978, Ser. No. 937,647
Int. Cl.² 141 B65B *1/04*
U.S. Cl. 141—231 **13 Claims**



1. A bag filling machine comprising:
a vehicular frame having a front end suitable for towing and a rear end supported by ground engaging wheels,

a bag filling assembly comprising a conveyor, a receptacle mounted on one end of said conveyor, and a material directing chute pivotally mounted to the other end of said conveyor, said material directing chute having a discharge end,

material moving means mounted within said receptacle, said receptacle having an opening permitting material to drop into said conveyor,

movable means mounting said bag filling assembly to said vehicular frame, said movable means elevating said bag filling assembly from a transport position to a work position, said conveyor in the transport position lying substantially horizontal on said frame and said chute sitting upright on said other end of said conveyor wherein the longitudinal axis of said chute is substantially perpendicular to the longitudinal axis of said conveyor and said other end of said conveyor being between said discharge end of said chute and said frame, said conveyor in the work position being inclined and said receptacle engaging the ground, said chute being pivoted about said pivotal connection to a downwardly extending position where said discharge end of said chute being between said other end of said conveyor and said frame,

power means mounted on said frame for driving said conveyor and said material moving means in said receptacle, said bag filling assembly being movable to its work position and material being dumped into said receptacle for transportation by said conveyor to said material directing chute for filling empty bags placed beneath said chute.

4,184,523

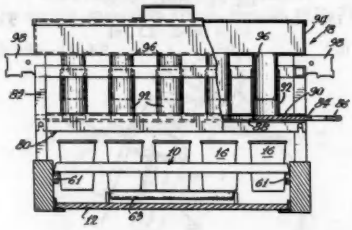
APPARATUS FOR DISPENSING, FILLING AND CAPPING A PLURALITY OF CUPS

David B. Carrigan, Hickory Corners, and Roy W. Freas, Kalamazoo, both of Mich., assignors to David Carrigan and Associates, Inc., Kalamazoo, Mich.

Division of Ser. No. 700,045, Jun. 25, 1976, Pat. No. 4,098,058. This application Apr. 12, 1978, Ser. No. 895,780

Int. Cl.[2] B65B *1/06;* **B65H** *3/44;* **G01F** *11/28*

U.S. Cl. 141—238 **8 Claims**



1. In conjunction with apparatus for dispensing, filling and capping a plurality of cups, means for depositing a flowable material into said cups, said means comprising a fixed base supported above said cups, said base having a first plurality of tubes mounted therein and spaced above said cups and being alignable therewith, means at the lower ends of said tubes for opening and closing said tubes, a container for said material disposed above said base, a second plurality of tubes depending from said container, said second plurality of tubes telescoping into said first plurality, said container and second plurality of tubes being movable upwardly and downwardly with respect to said base and said first plurality of tubes, whereby the volumetric capacity of said tubes are adjustable, and stop means for holding said container and second plurality of tubes in a fixed spaced relation to said base, said stop means comprising a member extending between said container and said base, said member having a plurality of graduated widths selectively movable between said container and said base for changing the volumetric capacity of the telescoping tubes corresponding to the size of cups to be filled.

4,184,524

MOUNTING FOR CENTRIFUGE FILLING DEVICE

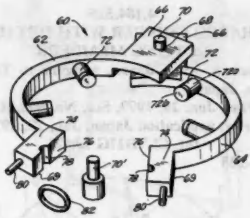
Peter R. Lorenz, Georg-Speyer-Strasse 79, D-6000 Frankfurt, Fed. Rep. of Germany

Filed Sep. 15, 1978, Ser. No. 942,694

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749367

Int. Cl.[2] B65B *3/00;* **B04B** *15/00*

U.S. Cl. 141—392 **7 Claims**



1. A mounting for reducing vibration in the filling devices of centrifuges comprising a pair of wings of predetermined configuration including means for cooperating with a support post on a rotor shield of a centrifuge to pivotally connect the wings together on the post and define a space therebetween adapted to receive the filling device of the centrifuge, said wings each having a plurality of radially inwardly extending resilient bumpers having resilient free ends adapted to engage said filling device to resist vibrations therein, and means for resiliently and releasably connecting said wings together thereby to resiliently engage said bumpers with said filling device.

4,184,525

MILLING MACHINE

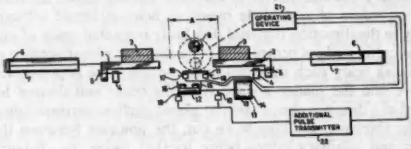
Franciscus J. Helmes, Tegelen, Netherlands, assignor to Helmes Machinefabriek B.V., Tegelen, Netherlands

Filed Dec. 22, 1977, Ser. No. 863,229

Claims priority, application Netherlands, Jan. 6, 1977, 7700096

Int. Cl.[2] B27F *1/10*

U.S. Cl. 144—201 **4 Claims**



1. A machine for milling a tenon at the end of a wooden beam-shaped workpiece wherein two interspaced workpieces are milled sequentially by a single cutter, comprising:

sledge means for supporting said workpiece;

first means for linearly moving said sledge means;

first and second abutment means for stopping said sledge means at a first set of predetermined positions;

pivoting support means for said cutter for pivotally moving said cutter between two predetermined positions separated by 180° ;

an operating device responsive to a pulse for causing said pivoting support means to pivot;

second means including pulse transmitters operated by said sledge means to transmit one said pulse to said operating

device when said sledge means reaches a second set of predetermined positions; and

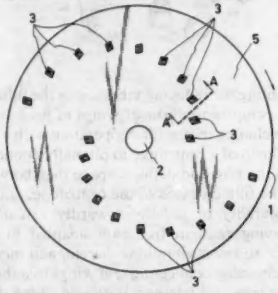
third means for transmitting an additional said pulse to said operating device following each second one of said pulses from said pulse transmitters, whereby said support means makes a first constant stepwise pivotal movement between said two predetermined positions separated by 180° each time said cutter reaches an end of a side face of said tenon, and said cutter makes a second constant stepwise pivotal movement between said two predetermined positions following each second one of said first constant stepwise pivotal movements.

4,184,526

DISC-SHAPED CHIPPER WITH DETACHABLE CUTTING MEMBERS

Morimasa Hanaya, Kure, Japan, assignor to Toyo Pulp Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1977, Ser. No. 808,219
Claims priority, application Japan, Jun. 28, 1976, 51-75505
Int. Cl.[2] B27G *13/08*
U.S. Cl. 144—235 **6 Claims**



1. A chipper comprising a disk body, a driving shaft mounted on said disk body with the longitudinal axis of said shaft aligned with the center of rotation in said disk body, said disk body having a flat planar surface, a plurality of cutting blade members detachably mounted on said disk body and disposed along at least one spiral path which extends on said surface of said disk body from the center to the periphery of said disk body, said blade members being spaced apart from one another with a predetermined distance, each of said cutting blade members including main and auxiliary cutting edges which are positioned and joined angularly to each other at a respective one end thereof of each said cutting edges, the main cutting edges of said blade members being oriented substantially in the direction that said disk body is rotated, each of said main cutting edges protruding from said flat planar surface of said disk body such that said main cutting edge is positioned above said flat planar surface with the other end thereof located at a distance above said flat planar surface corresponding to the thickness of chips to be cut, the juncture between the main and auxiliary edges being located twice the distance above said flat planar surface as said other end of said main cutting edge.

4,184,527

DEVICE FOR COLLECTING OIL FLOATING ON THE SURFACE OF WATER

Akinobu Kawamura, Kouri-danchi A3-107, 2-ban, 2-chome, Kourigaoka, Hirakata-shi, Osaka, Japan

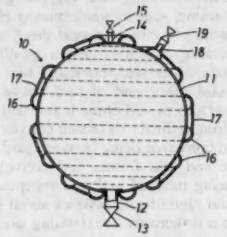
Filed Mar. 10, 1978, Ser. No. 885,270
Claims priority, application Japan, Mar. 10, 1977, 52/26661
Int. Cl.[2] B65D *1/32*
U.S. Cl. 150—1 **12 Claims**

1. A device for collecting oil floating on the surface of water which comprises:

a main body made of non-ventilative and flexible sheet material and transformable from a flatly folded configuration to a three dimensional configuration and vice versa;

at least one first nozzle for sucking and draining oil operatively connected to said main body;

a plurality of hollow elements made of non-ventilative and flexible sheet material and transformable from a flat configuration to a three dimensional configuration and vice versa;



at least one second nozzle for feeding and discharging air or gas operatively connected to one of said hollow elements and for selecting connecting said hollow elements to the atmosphere; and

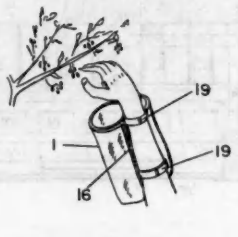
said plurality of hollow elements being adapted to cooperate with each other to form a truss structure to forcibly transform said main body to a three dimensional configuration when compressed air or gas is supplied into said elements.

4,184,528

BERRY AND FRUIT PICKING CONTAINER

Errol Kobilan, Rte. 1, Box 175, Elbert, Colo. 80106

Filed Nov. 27, 1978, Ser. No. 963,839
Int. Cl.[2] A01G *19/06*
U.S. Cl. 150—2 **5 Claims**



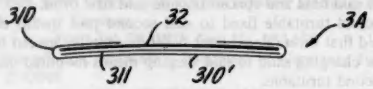
1. A berry and fruit arm attached collector comprising a flat protective fabric webbing spacedly slotted adjacent opposing ends, spaced arm encircling straps attachable to said webbing for encircling and attaching said webbing to a picker's forearm, a collecting bag having an open hemmed end, a circular wire supporting frame arranged in said hem and projecting therefrom, one end of said wire frame projecting from said hem being coiled and looped, and the other projecting end being bent for connection with said loop, and wire frame beyond said coil and loop being extended and depending downwardly of said bag, said depending wire extension being bent laterally at two spaced points to provide generally horizontal loops, said horizontal loops being insertable in said webbing slots whereby said wire bag supporting frame, bag and webbing are interconnected for assembly on the picker's forearm, and said depending wire extension is interposed in and covered by said webbing.

4,184,529

TIRE HAVING A TREAD REINFORCEMENT

Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Aug. 1, 1977, Ser. No. 820,852
Claims priority, application France, Feb. 8, 1977, 7623648
Int. Cl.² B60C 9/18
U.S. Cl. 152—361 FP 8 Claims



1. In a tire for heavy carrier vehicles traveling off the road, having a radial carcass reinforcement and a tread reinforcement formed of oblique steel cable plies, the improvement wherein

said oblique steel cable plies have about the same axial width and consist of a normal nonfolded edge ply, a fractional nonfolded edge ply and a fractional folded edge ply,

the two edges of the fractional folded edge ply being folded around at least the edges of the normal nonfolded edge ply,

the oblique steel cables of the fractional nonfolded edge ply and the oblique steel cables of the fractional folded edge ply being substantially parallel to one another but crossed with the oblique steel cables of the normal nonfolded edge ply, and

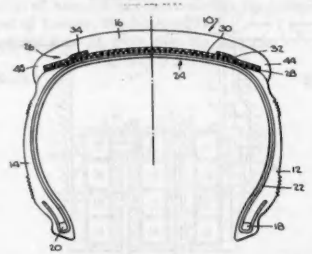
the sum of the strengths of the two fractional plies being equal to the strength of a comparison normal folded edge ply having oblique steel cables oreinted in the same direction as that of the oblique steel cables of the two fractional plies.

4,184,530

TIRE AND REINFORCING BELT THEREFOR

Henri J. Mirtain, Compiegne, France, assignor to Uniroyal, S.A., Campiegne, France

Filed Nov. 21, 1978, Ser. No. 962,841
Claims priority, application France, Nov. 25, 1977, 77 35542
Int. Cl.² B60C 9/10
U.S. Cl. 152—361 FP 20 Claims



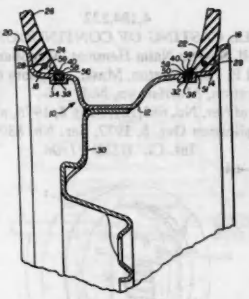
1. A pneumatic tire comprising a pair of sidewalls, a tread extending axially between the sidewalls, and a reinforcing belt underlying the tread, said reinforcing belt comprising a first ply of cords formed from a non-metallic synthetic material having a high modulus of elasticity, a second ply of metallic cords radially outward of said first ply and overlying the medial region of said first ply, said second ply having a width which is less than the width of said first ply and which is between about one fourth and about three fourths of the width of said tread, and a strip of cords formed from a non-metallic synthetic material having a low modulus of elasticity, said strip lying radially outwardly of said first ply, at least a portion of said strip lying radially outwardly of said second ply and overlapping a first edge region of said second ply, the cords of said first ply, said second ply and said strip being coated with rubber.

4,184,531

VEHICLE WHEEL ASSEMBLY HAVING SHEARABLE TIRE LATCHING RINGS

Richard F. Honigsbaum, 21A Barry Gardens, Passaic, N.J. 07055

Filed Jan. 12, 1977, Ser. No. 758,905
Int. Cl.² B60C 15/02
U.S. Cl. 152—379.1 28 Claims



1. In an improved assembly for removably securing an inflatable tire about a vehicle wheel for enabling rotational movement of the mounted tire against a surface for propelling the vehicle, said tire including a tire bead having an outwardly facing surface, the assembly being of the type including a wheel, said wheel including a rim and center member, the rim having a well, an inboard bead seat contiguous with the inboard sidewall of said well, and an outboard bead seat contiguous with the outboard sidewall of said well, said inboard bead seat terminating in an inboard rim flange, said outboard bead seat terminating in an outboard rim flange; the improvement in said assembly comprising: at least one of said bead seats having at least one circumferential receiving groove therein; and at least one latching ring, said ring including a portion disposable in said groove and a portion which protrudes radially outward from said grooved bead seat when said ring is disposed in said groove, the protruding portion being dimensioned to secure the tire bead adjacent its terminating rim flange when said tire bead is seated on said grooved bead seat, said protruding portion protruding sufficiently from said groove to secure said tire bead adjacent said last-mentioned rim flange even if said tire should become deflated, said ring having a portion axially shearable along a shear section by an inward axial force applied to the outwardly facing surface of said tire bead substantially in the direction of the axis of rotation of the mounted tire, said inward axial force being in excess of the axial force applied to the ring by said tire bead as a result of the rotational movement of said tire against said surface, whereby after said shearable portion has been sheared off by applying a sufficient inward axial force to said latching ring shearable portion, said tire may be dismounted from the wheel without damaging said tire bead, said at least one ring including means for avoiding shearing of said shearable portion during mounting of said tire on said rim.

28. In an improved vehicle tire adapted for removable securement to a vehicle wheel assembly, said wheel assembly including a center member, a rim, and a latching ring, the rim having a well, an inboard bead seat contiguous with the inboard sidewall of said well, an outboard bead seat contiguous with the outboard sidewall of said well, at least one of said bead seats having a circumferential receiving groove therein, said inboard bead seat terminating in an inboard rim flange and said outboard bead seat terminating in an outboard rim flange,

said latching ring including a portion disposable in said groove and a portion which protrudes radially outward from said grooved bead seat when said ring is disposed in said groove; said tire being of the type including an inboard tire bead seatable on said inboard bead seat and an outboard tire bead seatable on said outboard bead seat, the improvement in said tire comprising: the radially inward face of the tire bead seatable on said at least one grooved bead seat having a circumferential groove therein for receiving said protruding portion of said latching ring whereby to secure said tire on said grooved bead seat adjacent its terminating rim flange even if said tire should become deflated.

4,184,532

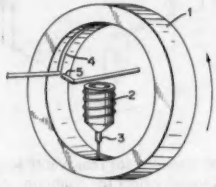
CHILL ROLL CASTING OF CONTINUOUS FILAMENT

John R. Bedell, Sparta; Naim Hemmat, Mendham, both of N.J., and Donald E. Polk, Boston, Mass., assignors to Allied Chemical Corporation, Morristown, N.J.

Continuation of Ser. No. 683,121, May 4, 1976, abandoned. This application Oct. 5, 1977, Ser. No. 839,546

Int. Cl.[2] B22D *11/06*

U.S. Cl. 164—64 **15 Claims**



8. A process for making metal filament which comprises directing a jet of molten metal onto the inner surface of a rotating annular chill roll, which inner surface in its entirety is parallel to the axis of rotation of the chill roll, stripping the metal filament formed by solidification of the molten metal in contact with the inner surface of the rotating chill roll at a point beyond which solidification occurred, and guiding the stripped metal filament away from the inner surface of the chill roll.

4,184,533

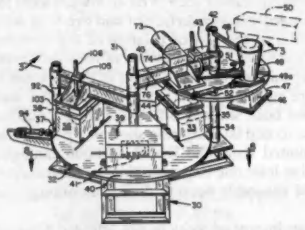
MACHINE FOR SHAPING SAND INTO CORES OR MOLDS

Michael D. Breitbarth, Canby, Oreg., assignor to ESCO Corporation, Portland, Oreg.

Filed May 30, 1978, Ser. No. 910,763

Int. Cl.[2] B22C *11/04, 15/24*

U.S. Cl. 164—181 **5 Claims**



1. A machine for shaping sand into cores or molds comprising:

a base,

a first vertically extending post means rotatably mounted on said base,

a first turntable fixed to said first post means above said base for rotation with said first post means, at least three frames supporting shaping means mounted on said first turntable in angular spaced relation for shaping sand in each of said frame,

means on said base for indexing said frames through a first orbit and respectively through stations for charging said shaping means with sand, treating said shaped sand and removing the treated shaped sand,

a second vertically extending post means rotatably mounted on said base and spaced outside said first orbit,

a second turntable fixed to said second post means above said first turntable, at least two horizontally spaced heads for charging sand to said shaping means mounted on said second turntable.

said indexing means including a prime mover connected to both of said post means to index said second turntable through said filling and charging stations in synchronism with said first turntable and move said heads through a second orbit wherein the second turntable charging station is vertically alignable with the first turntable charging station,

means on said base for engaging each frame when the same is in said first turntable charging station and moving the same upwardly to engage a head in said second turntable charging station, and

means responsive to the positions of said turntables to deliver pressure fluid to a head in said second turntable charging station to force sand therefrom into a frame in said first turntable charging station and in sealing engagement with said head.

4,184,534

TILTING DEVICE FOR VERTICALLY CAST METAL SECTIONS

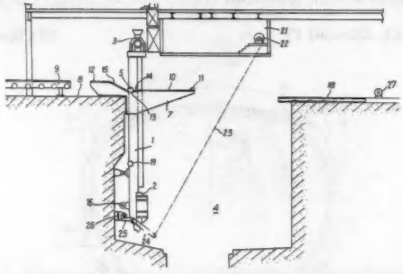
Pierre Peytavin, Neuilly-sur-Seine, France, assignor to Creusot-Loire-Vallourec, Paris, France

Filed Jun. 20, 1978, Ser. No. 917,284

Claims priority, application France, Jun. 24, 1977, 77 19454

Int. Cl.[2] B22D *11/128*

U.S. Cl. 164—269 **10 Claims**



1. In a tilting device for metal sections formed by a continuous vertical casting installation along a casting axis between front and rear portions of the installation, a cradle whose length corresponds essentially to the length of the metal section, means mounting said cradle for pivoting around an axis near its center of gravity from a vertical position aligned with the casting axis to a horizontal position, the cradle having a longitudinally movable abutment to support the metal section when the cradle is in the vertical position and to discharge the metal section when the cradle is in the horizontal position, the improvement comprising, means for tilting said cradle from its vertical position to its horizontal position and comprising at least one hauling means, means mounting the hauling means at a location above the pivot axis of the cradle, and offset laterally to the rear of the casting axis, a cable connected between said

hauling means and a point on the cradle near a lower extremity of the cradle, and means supporting said cradle for displacement toward and away from the casting axis in both the horizontal position and the vertical position of said cradle.

4,184,535

COOLING CHAMBER CLOSURE MEMBER

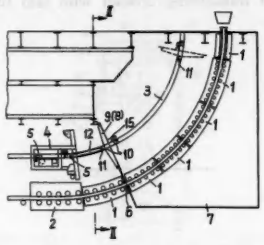
Herbert Lindermann, Duisberg, Fed. Rep. of Germany, assignor to Fried. Kruff Gesellschaft mit beschrankter Haftung, Essen, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,355

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1977, 2733568

Int. Cl.² B22D *11/124*

U.S. Cl. 164—442 **9 Claims**



1. A closure member for closing an opening provided in the wall of a chamber of a system for casting metal strip conveyed through the chamber, the opening being provided for passage of a carriage traveling along rails extending through the opening and into the chamber, said closure member being in the form of a cover for the opening, being disposed inside said chamber, and comprising undercarriages which travel on said rails.

4,184,536

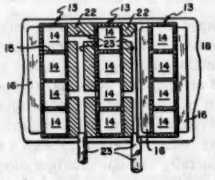
HEAT REJECTION SYSTEM

Gregory C. Smith; Richard D. Tokarz; Harvey L. Parry, Jr., and Daniel J. Braun, all of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 22, 1978, Ser. No. 880,254

Int. Cl.² F28D *21/00*

U.S. Cl. 165—1 **5 Claims**



1. In a method of rejecting waste heat from a power plant in which a heat exchange fluid is flowed in closed cycle relationship between the power plant and a cooling tower to reject the waste heat to the atmosphere, the improvement comprising flowing said heat exchange fluid through alternate flow paths in the cooling tower, maintaining stagnant water in the remaining flow paths under normal ambient temperature conditions, flowing said water through one or more of said remaining flow paths as the ambient temperature increases above that at which dry cooling of the heat exchange fluid along is adequate, the first of such flow paths through which water is flowed being at the back of the cooling tower with respect to the direction of flow of air through the cooling tower and evaporatively cooling the water.

4,184,537

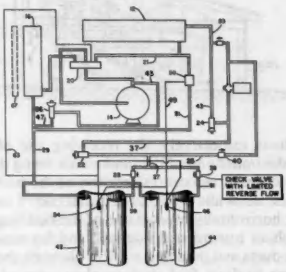
SELECTIVE HEATING AND COOLING APPARATUS

James W. Sauder, San Ysidro, Calif., assignor to Chattanooga Pharmacal Company, Chattanooga, Tenn.

Continuation-in-part of Ser. No. 616,909, Sep. 26, 1975, Pat. No. 4,026,299, and Ser. No. 728,262, Sep. 30, 1976. This application May 26, 1977, Ser. No. 800,607

Int. Cl.² F28F *7/00*

U.S. Cl. 165—46 **13 Claims**



1. A portable apparatus for selectively cooling or heating a limb of a patient or the like and comprising a compressor, a condenser, expansion valve means, at least one flexible pad adapted to be wrapped around a bodily limb and including flexible tubing serving as an evaporator, an auxiliary evaporator, conduit means including a reversing valve for selectively circulating a refrigerant composition

(a) in a first cooling direction serially from said compressor to said condenser, to said expansion valve means, to said tubing, to said auxiliary evaporator and back to said compressor, and

(b) in a second heating direction serially from said compressor to said auxiliary evaporator, to said tubing, to said expansion valve means, to said condenser, and back to said compressor, and

a by-pass conduit operatively connected to said conduit means and extending from a point downstream of said compressor and upstream of said pad to a point downstream of said pad and upstream of said auxiliary evaporator when viewed in said cooling direction, and by-pass valve means for selectively opening and closing said by-pass conduit and so that the refrigerant composition will flow concurrently through the by-pass conduit and through the flexible tubing of said pad when said by-pass conduit is open and the refrigerant is circulating in said cooling direction, whereby the temperature of said pad during cooling may be controlled by the opening and closing of said by-pass valve means.

4,184,538

VENTILATING HEAT EXCHANGER FOR BARNS

George W. Rauenhorst, 1312 W. Fairview, Olivia, Minn. 56277

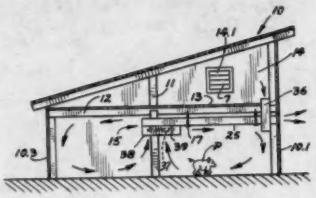
Filed Dec. 22, 1977, Ser. No. 863,230

Int. Cl.² A23C *3/02*

U.S. Cl. 165—66 **18 Claims**

11. In combination with a barn-like building having broad and open interior spaces extending between widely separated sidewalls which entirely enclose the building interior, a ventilating heat exchange apparatus including elongate exhaust and intake air ducts extending horizontally along and adjoining each other and between the sidewalls of the building and a central portion of the open interior building between the sidewalls thereof, the intake air duct being in superposed relation

with the exhaust air duct and having a common wall with the exhaust air duct and formed of heat conducting material to transfer heat from the warm air flowing in the exhaust duct to the cooler air flowing in the intake duct, the exhaust duct having a discharge end opening through a port in the sidewall of the building and disposed adjacent the inlet end of the intake duct, intake conduit means connected with the inlet end of the intake duct and delivering fresh air thereto and significantly separating the source and delivery locations of the intake and



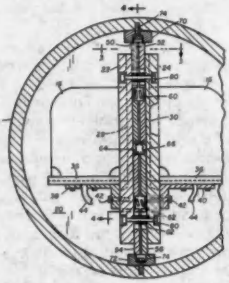
exhaust ducts respectively, the receiving end of the exhaust duct and the outlet end of the intake duct being disposed adjacent each other at the central portion of the building interior between the sidewalls thereof, the outlet end of the intake duct extending horizontally toward one of the building sidewalls to direct fresh air toward said sidewall, and fan means in at least one of the ducts and inducing air flow through the exhaust and intake ducts to draw foul air from the center of the building and direct fresh air into the building and toward the sidewall of the building.

4,184,539

ELECTRONIC CARD MOUNT AND HEAT TRANSFER ASSEMBLY FOR UNDERWATER VEHICLES

Charles R. Rein, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 10, 1978, Ser. No. 923,138
Int. Cl.[2] F28F *13/00*; H01L *23/34*
U.S. Cl. 165—80 B **7 Claims**



4. In combination with an underwater instrumentation vehicle comprising an elongated hull including a bulkhead and a tubular cover section, an electronic card mount and heat transfer device comprising:

a pair of congruent, rectangular, spaced, parallel card mounting plates presenting outwardly and inwardly facing surfaces, said card mounting plates each having one edge fixed to said bulkhead and each extending at right angles therefrom;

clamping means, on outwardly facing surfaces, for releasably securing a plurality of electronic cards in heat transfer relation to each of said mounting plates;

first and second pairs of parallel, substantially congruent, rectangular slip plates disposed between said inwardly facing surfaces of said card mounting plates, one of the slip plates of said first pair lying in a first substantially common plane with one of the slip plates of said second pair and the other of the slip plates of said first pair lying in a second substantially common plane with the other slip plate of said second pair;

means extending through said card mounting plates and said slip plates for limiting movement of the latter relative to the former;

first spring means, disposed between the slip plates of said first pair and between the slip plates of said second pairs, for resiliently urging said slip plates into heat transferring contact with said card mounting plates;

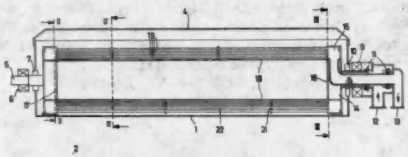
second spring means, disposed between said one slip plate of each of said pairs and between said other slip plates of each of said pairs, for urging said slip plates individually into heat transferring contact with said tubular cover section.

4,184,540

ROTARY HEAT EXCHANGER

Bertel Myréen, Abo, Finland, assignor to RA-Shipping Ltd. Oy, Pargas, Finland

Filed Dec. 16, 1977, Ser. No. 861,555
Claims priority, application Finland, Dec. 16, 1976, 763619
Int. Cl.[2] F28F *00/00*; F28D *11/08*
U.S. Cl. 165—92 **6 Claims**



1. Heat exchanger for the heating or cooling of a liquid, in particular a suspension having a high content of solid particles, comprising a container having an inlet and an outlet for said liquid positioned at opposite sides and opposite ends of said container, at least one substantially horizontal heat exchange unit being rotatably mounted in said container and comprising two end chambers communicating through a plurality of pipes arranged in a generally annular configuration, said container having below a horizontal plane through the rotational axis of said heat exchange unit a circular cylindrical shape to closely conform to said heat exchange unit, means for feeding a heat exchange fluid through said end chambers and said plurality of pipes, a central tube extending concentrically in relation to said rotational axis between said end chambers and being closed-off from them and from said container, said central tube having a diameter not less than 40% of the greatest distance between any two pipes of said heat exchange unit measured at right angles to said rotational axis, and said outlet from said container having a lower edge at a level lower than the uppermost portion of said central tube to maintain said uppermost portion above the free surface level of said liquid in said container.

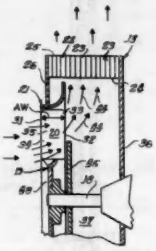
4,184,541
HEAT EXCHANGE APPARATUS INCLUDING A TOROIDAL-TYPE RADIATOR

Harold D. Beck, Downers Grove, and C. Paul Kolthoff, Jr., Naperville, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 728,657, Oct. 1, 1976, Pat. No. 4,136,735, which is a continuation-in-part of Ser. No. 543,713, Jan. 24, 1975, abandoned, which is a continuation of Ser. No. 472,257, May 22, 1974, abandoned. This application Oct. 23, 1978, Ser. No. 954,059

Int. Cl.[2] F28F *13/06*

U.S. Cl. 165—125 16 Claims



1. A heat exchange apparatus comprising:

a heat exchanger means including a toroidal radiator structure, said toroidal ratiator structure including a toroidal radiator core having a plurality of radially extending cooling air passageways formed therethrough, said toroidal radiator structure further including a first radially extending wall and a second radially extending wall axially spaced and substantially parallel with respect to said first wall, said first and second walls substantially defining the axial limits of said toroidal radiator core and an air-receiving plenum chamber disposed radially inwardly of said toroidal radiator core;

a rotatable, axial flow fan having a plurality of circumferentially spaced, radially extending impeller blades;

a generally annular fan shroud means supported within an opening formed through said first wall and encircling the fan, said fan shroud means including a generally cylindrical, axially, extending throat section, an annular, generally radially extending flat flange section, said flat flange section being spaced radially outwardly and axially in a direction downstream from said throat section and having a radial length substantially equal to the axial length of said cylindrical throat section, said fan shroud means being positioned with respect to said toroidal radiator structure whereby said flat flange section lies substantially in a plane spaced and parallel with respect to said first and second walls, and an annular intermediate section extending between and operatively interconnecting said throat section and said radial flat flange section, said throat section, intermediate section, and radial flat flange section being effective to produce a low pressure region between the air stream flowing over the surface thereof and such surface when the fan is in operation; and

an air recirculation barrier means contiguous to the air discharge side of the fan for obstructing axial flow of air from the air discharge side toward the air intake side of the fan at the hub region of the fan.

4,184,542
PLATE TYPE CONDENSER

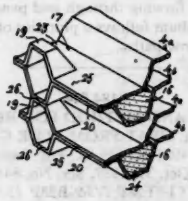
Hiroyuki Sumitomo, Takatsuki, Japan, assignor to Hisaka Works, Ltd., Osaka, Japan

Filed Sep. 27, 1977, Ser. No. 836,996

Claims priority, application Japan, Apr. 16, 1976, 51/43998; Oct. 1, 1976, 51/118700; Oct. 19, 1976, 51/125699; Apr. 16, 1977, 52/43997

Int. Cl.[2] F28F *3/08*

U.S. Cl. 165—166 2 Claims



1. A plate type condenser wherein a plurality of heat transmitting plates are assembled in side-by-side contacted relation with a gasket disposed between adjacent heat transmitting plates to define therebetween suitably opened steam passages, and closed cooling liquid passages are enclosed in a shell, each of said heat transmitting plates being formed with discontinuous ridges and inter-ridge regions in its marginal portion, said ridges and inter-ridge regions contacting each other between adjacent plates to maintain a plate clearance, said condenser being characterized in that when seen from the steam passage side, said inter-ridge regions are substantially longer than said ridges.

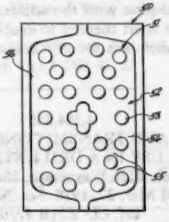
4,184,543
HEAT EXCHANGER EXHIBITING IMPROVED MECHANICAL AND THERMAL STABILITY

Charles A. Kleine, Florissant, Mo., and Verne L. Middleton, East Alton, Ill., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 703,054, Jul. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 573,953, May 2, 1975. This application Aug. 11, 1978, Ser. No. 932,974

Int. Cl.[2] F28F *3/14*

U.S. Cl. 165—170 7 Claims



1. An integral metal panel for use in a solar energy collector system, said panel being formed of at least two sheets of metal, said panel having a generally rectangular shape comprising first and second opposing short edges and third and fourth opposing long edges, said sheets being partially spaced apart to define a spaced apart portion and opposing headers adjacent said first and second edges respectively of said panel connected by a plurality of tubular passageways extending between said headers and entry and exit passageways extending generally centrally between said third and fourth edges of said panel from said headers to said first and second edges respectively of

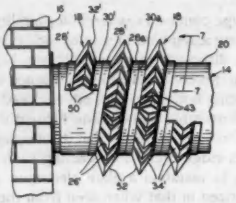
said panel, said tubular passageways being defined by a plurality of individual bonded portions arranged in said spaced apart portion of said panel intermediate said headers, said individual bonded portions having a circular shape and being arranged in rows transversely to said third and fourth edges of said panel, with the individual circular bonded portions in one row being staggered and of a size just sufficient to be barely overlapped with respect to the individual bonded portions in a next adjacent row so that there is no linear path extending from said entry to said exit passageways which can be followed by a heat exchange medium flowing through said panel and so that said heat exchange medium follows a plurality of divided and subdivided random flow paths.

4,184,544

APPARATUS AND METHOD FOR RECOVERING WASTE HEAT FROM FLUE GASES

Harold J. Ullmer, 4981 Shirley St., Las Vegas, Nev. 89119

Filed Oct. 31, 1977, Ser. No. 846,795
Int. Cl.[2] F28F *1/36*; B23P *15/26*
U.S. Cl. 165—184 **11 Claims**



1. In combination with a flue pipe for discharging hot gases, a heat exchange attachment which comprises a pliable elongated band of conductive material having a longitudinally elongated inverted channel-like projecting portion, a longitudinally elongated strip-like contacting portion adjoining the projecting portion therealong on either side thereof, and means providing a longitudinal series of spaced apart transverse cuts in said projecting portion dividing the latter into a longitudinal series of individual projecting members which extend continuously from one to the other of said contacting portions, said attachment being wound around said pipe with said contacting portions disposed substantially in surface contact with the outer surface of said pipe for conduction of heat from the pipe to the contacting portions, and said members projecting outwardly from said contacting portions into the atmosphere surrounding said pipe with the adjacent edges of successive members spaced apart thereby to enable air to flow between and within the members for heat transfer to the surrounding atmosphere.

4,184,545

MEASURING AND TRANSMITTING APPARATUS FOR USE IN A DRILL STRING

Jack R. Claycomb, 8226 Waynemen, Houston, Tex. 77040

Filed Mar. 27, 1978, Ser. No. 890,368
Int. Cl.[2] E21B *47/022*
U.S. Cl. 166—113 **17 Claims**

1. Apparatus for use in a drill string to form a signal of downhole drilling information, comprising:

(a) an elongate outer body of tubular construction having an outer wall and which outer body terminates in upper and lower connective means for connection in a drill string;

(b) an inner body received inside of and enclosed within said outer body;

(c) means for positioning said inner body to define a mud flow annular space around said inner body on the interior of said outer body;

(d) motor means for intercepting the flow of mud through said annular space which motor means converts the mud flow into rotational torque;

(e) a shaft connected to said motor to be rotated thereby;

(f) an hydraulic pump connected to said shaft for pumping hydraulic fluid at an elevated pressure;

(g) a controllable valve means;

(h) a movable piston received in a cylinder;

(i) a constricted passage in said annular space located such that the mud flow through the annular space is directed

through the constricted passage, and a plug movably actuated by said piston to vary the constiction on the mud flow with movement of said plug; and

(j) an hydraulic circuit connected to said hydraulic pump utilizing hydraulic fluid flowing in hydraulic conduits through said controllable valve to said piston and cylinder for moving the piston to an altered position to modulate the flow of mud and thereby form an output signal dependent on the manipulation of said controllable valve means.

4,184,546

ANCHORING APPARATUS FOR TOOLS USED IN DETERMINING THE STUCK POINT OF A CONDUIT IN A BOREHOLE

Yves Nicolas, Versailles, and Jacques Tromelin, Longjumeau, both of France, assignors to Schlumberger Technology Corporation, Tex.

Division of Ser. No. 834,193, Sep. 19, 1977, Pat. No. 4,125,013.
This application Apr. 10, 1978, Ser. No. 894,885
Claims priority, application France, Sep. 28, 1976, 76 29055
Int. Cl.[2] E21B *23/00*
U.S. Cl. 166—206 **11 Claims**

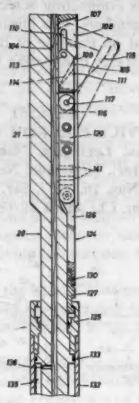
1. Well bore anchoring apparatus comprising:

a body adapted for suspension in a well bore;

anchoring means on said body including a plurality of wall-engaging anchors spatially disposed around said body, and pivot means respectively coupling said anchors to said body for achieving lateral movement of said anchors between retracted and extended positions; and

anchor-actuating means on said body including an actuator arranged for movement between spaced positions on said body, linkage means pivotally intercoupling said actuator and each of said achors, and locking means including longitudinal shoulders respectively disposed on said body adjacent to the paths followed by selected portions of said linkage means upon movement of said actuator and means on said linkage means adapted for promoting lateral deflection of said linkage means against at least one of said longitudinal shoulders upon longitudinal movement of

said anchor-actuating means only to the extended position, thereby stabilizing said linkage means and said anchoring means against side play only when said anchors are in said extended positions.



4,184,547

SITU MINING OF FOSSIL FUEL CONTAINING INORGANIC MATRICES

Donald L. Klass, Barrington, and Sambhunath Ghosh, Homewood, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 800,357, May 25, 1977. This application Apr. 17, 1978, Ser. No. 896,976

The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.

Int. Cl.[2] C12B *1/00;* C21B *43/22;* E21C *41/10*

U.S. Cl. 166—246 **15 Claims**

1. A process for recovering underground fossil fuel deposits retained in an inorganic matrix comprising:

contacting said deposit with an aqueous medium of anaerobic organisms under mesophilic or thermophilic temperature conditions for a time sufficient to produce particles of said deposit of a size capable of forming a slurry with said aqueous medium and to produce gaseous hydrocarbons from the organic components of said deposit;

pumping said aqueous slurry containing said organisms and particulates of organic fossil fuel and inorganic matrix to the ground surface;

separating said particulates from the aqueous medium of anaerobic organisms, the particulates being further processed to separate the organic carbon and hydrocarbon component from the inorganic matrix;

recycling said aqueous medium of anaerobic organisms to the underground fossil fuel deposit for further production of particles of said deposit; and

removing said gaseous hydrocarbons from said deposit.

4,184,548

METHOD FOR DETERMINING THE POSITION AND INCLINATION OF A FLAME FRONT DURING IN SITU COMBUSTION OF AN OIL SHALE RETORT

Irwin Ginsburgh, Morton Grove, and Christos G. Papadopoulos, Lisle, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 17, 1978, Ser. No. 925,065

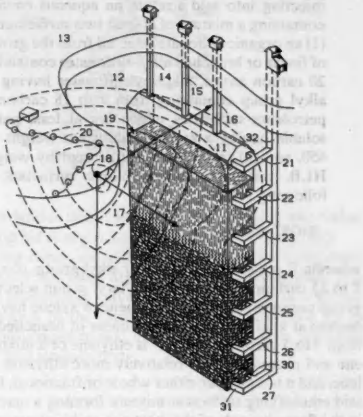
Int. Cl.[2] E21B *43/24, 47/10*

U.S. Cl. 166—251 **2 Claims**

1. A method for determining the position of the flame front during an in situ combustion of a rubbled oil shale retort wherein said rubbled oil shale retort is constructed essentially vertical of known dimensions and known position having essentially vertical sidewalls and said flame front is intended to be an essentially horizontal plane passing vertically through said retort during combustion involving the steps of:

(a) initiating a seismic signal on or near the surface of the earth at a position to one side of an essentially vertical sidewall of said retort such that the angle of incidence of the seismic signal to said sidewall inherently results in predominantly downward reflected seismic energy,

(b) positioning at least one seismic detector means on or near



the surface of the earth at a second position to the same side of said essentially vertical sidewall intended to reflect said seismic signal,

(c) detecting the reflected seismic energy as a function of time by using said seismic detector means, and

(d) determining the position of said flame front from the enhancement of the relative amount of seismic energy being reflected back to the surface of the earth associated with high temperature induced refraction of said initiated seismic signal which occurs in the vicinity of the flame front.

4,184,549

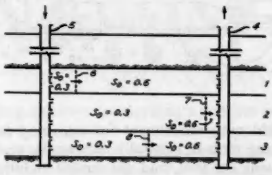
HIGH CONFORMANCE OIL RECOVERY PROCESS

Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plain, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,508

Int. Cl.[2] E21B *43/22*

U.S. Cl. 166—269 **15 Claims**



1. A method of recovering petroleum from a subterranean, petroleum-containing formation, said formation containing water whose salinity is from 0 to 20,000 parts per million total dissolved solids, said formation containing at least two distinct petroleum-containing strata or layers, the permeability of at least one of said strata being at least 50 percent greater than the permeability of the other stratum, said formation being pene-

trated by at least one injection well and by at least one production well, both wells being in fluid communication with substantially all of said formation, comprising

(a) injecting a first aqueous oil-displacing fluid into the formation via the injection well, said fluid passing through at least one of the more permeable strata of said formation and displacing oil therein toward the production well, from which it is recovered to the surface of the earth;

(b) after said first aqueous oil displacing fluid has passed through at least one of said more permeable stratum to the production well, discontinuing injecting said fluid and injecting into said stratum an aqueous emulsifying fluid containing a mixture of at least two surfactants comprising (1) an organic sulfonate selected from the group consisting of linear or branched alkyl sulfonates containing from 8 to 20 carbon atoms, alkylarylsulfonates having at least one alkyl group containing from 9 to 18 carbon atoms, and petroleum sulfonates which are at least partially water soluble having a median equivalent weight from 350 to 450, and (2) from 0.1 to 5.0 percent by weight of a low HLB, water insoluble nonionic surfactant having the following formula:

$$R(OR')_nOH$$

wherein R is a branched or linear alkyl group, containing from 7 to 25 carbon atoms, or an alkylaryl group selected from the group consisting of benzene, toluene or xylene having attached thereto at least one alkyl group, linear or branched, containing from 9 to 5 carbon atoms, R′ is ethylene or a mixture of ethylene and propylene with relatively more ethylene than propylene; and n is a number either whole or fractional, from 1 to 10, said emulsifying surfactant mixture forming a macro-emulsion in the flow channels of the most permeable strata of the formation, thereby reducing the permeability of the strata invaded by the emulsifying fluid; and

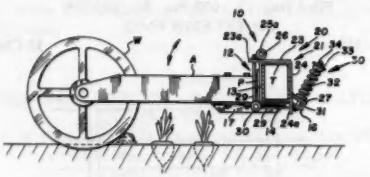
(c) thereafter injecting a second aqueous oil displacing fluid into the formation, said oil displacing fluid invading at least one stratum not invaded by the oil displacing fluid of step (a) above, displacing petroleum therein toward the production well where it is recovered to the surface of the earth.

4,184,550

SPRING CUSHION MOUNTING FOR BEET HARVESTING DEVICE

Harley Ammermann, Box 526, Clara City, Mich. 56222

Filed Mar. 24, 1978, Ser. No. 889,857
Int. Cl.[2] A01B *61/00*; A01D *19/00*
U.S. Cl. 171—58 **8 Claims**



1. A cushioning attachment for attaching harvesting and earth working tools to generally rectangular tool bars and the like for towing the tool, said attachment including:

a. a first, generally L-shaped member having a vertical leg and a horizontal leg for engaging the rear and bottom of the tool bar respectively and being attachable to the tool;

b. a second, generally L-shaped member having a vertical leg and a horizontal leg for engaging the front and the top of the tool bar respectively;

c. means for attaching said second member to said tool bar;

d. means for rotatably connecting said first and second members, said means being located respectively at the upper edge of said vertical leg of said first member and the rearwardly directed end of said second member; and,

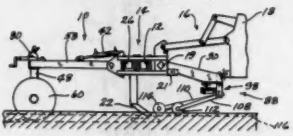
e. biasing means connecting selected portions of said first and second members, said biasing means being arranged and positioned on the side of the tool bar opposite said means for rotatably connecting the same.

4,184,551

STEERING DEVICE FOR ROW CROP CULTIVATOR

Henry K. Orthman, Lexington, Nebr., assignor to Orthman Manufacturing, Inc., Lexington, Nebr.

Filed Nov. 16, 1977, Ser. No. 851,937
Int. Cl.[2] A01B *69/06, 79/00*
U.S. Cl. 172—26 **15 Claims**



1. A steering apparatus for a row crop implement including an elongated tool bar adapted to be arranged transversely of the crop rows, hitch means connected to the tool bar for connection of the tool bar to a prime mover, and a plurality of tools carried on the tool bar in spaced apart relation for working the ground between the crop rows, said steering apparatus adapted to maintain said implement in a working position in fixed lateral relation to said crop rows and comprising:

a first coulter disc,

a first coulter mounting member operatively connected to the tool bar for pivotal movement about a first generally upright axis, said first coulter disc mounted on the first coulter mounting member for rotation about a first generally horizontal axis,

row follower means operatively connected to the tool bar and actuated in response to transverse movement of the tool bar relative to said working position, said row follower means being operative to follow said crop rows independently of transverse movements of the tool bar and prime mover relative to said crop rows,

steering means responsive to actuation of the row follower means, for pivoting said first coulter mounting member, thereby to steer the first coulter disc for corrective lateral movement of the tool bar to said working position, and

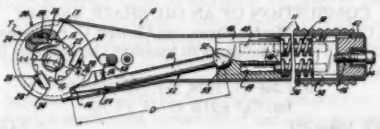
adjustment fixture means for increasing and decreasing the relative pivotal movement of the first coulter mounting member responsive to actuation of the row follower means.

4,184,552

MANUALLY ACTUATED IMPACT TOOL

J. Edward C. Anderson, Moreland Hills, Ohio, assignor to Marquette Metal Products Company, Cleveland, Ohio

Continuation of Ser. No. 797,750, May 17, 1977, abandoned. This application Aug. 16, 1978, Ser. No. 934,005
Int. Cl.[2] B25D *15/00*
U.S. Cl. 173—93.5 **4 Claims**



1. In a manually operable impact tool comprising a rotatable tool head for engaging a fastening member, a rotational inertia member surrounding said tool head and capable of rotation

relative to said tool head, a driving connection between said inertia member and tool head, an operating handle having its longitudinal axis extending through the rotational axis of said inertia member disposed adjacent to and capable of movement relative to said inertia member, means coacting with said driving connections for effecting disengagement of said driving connections when movement of said tool head is resisted by a predetermined force and the handle moves relative to the inertia member and for effecting re-engagement of said driving connections in another operative condition, spring means disposed in said handle, force transmission means coacting with said handle and inertia member to actuate said spring for the storage of energy upon said relative movement of the handle and inertia member and to transmit such stored energy to the inertia member to rotate said inertia member and thereby effect the application of an impact force on said tool head upon re-engagement of said driving connections, said force transmission means includes:

(a) a slide disposed in the handle for linear movement relative to the handle and with one end of the spring means engaging the slide to bias the latter toward said inertia member; and

(b) a substantially straight push rod having one end in engagement with the inertia member and at the opposite end coupled by a universal connection of low friction to the slide.

4,184,553

METHOD FOR CONTROLLING DIRECTION OF HORIZONTAL BOREHOLE

Emrys H. Jones, Jr., Westover, W. Va., and Thomas R. Miller, Waynesburg, Pa., assignors to Conoco, Inc., Ponca City, Okla.

Filed Oct. 25, 1978, Ser. No. 954,520
Int. Cl.[2] E21C *15/00, 19/00*
U.S. Cl. 175—61 **6 Claims**

1. In a method of drilling a generally horizontal borehole in an underground formation wherein a rotary drill string with a drilling bit attached thereto is advanced into said formation, the improvement wherein the path of said borehole is adjusted in a downward direction by:

(a) running a cylinder having a fluid passage therethrough through the rotary drill string to a position in said drill string adjacent said bit; and

(b) continuing drilling with said cylinder adjacent said bit whereby the weight of said cylinder causes the path of said borehole to be adjusted downwardly.

4,184,554

CHECK VALVE FOR ROCK DRILL

Bert G. Levefelt, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed May 24, 1978, Ser. No. 909,118
Claims priority, application Sweden, May 24, 1977, 7706028
Int. Cl.[2] E21B *39/00*
U.S. Cl. 175—317 **7 Claims**

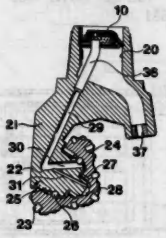
1. A check valve for use in rock drill bits of the type comprising a drill body having a chamber at its upper end for connection to a drill tube and having a plurality of projecting legs carrying rotatable cutters having cutting inserts, and passage means for conducting flushing medium to said cutter, said check valve comprising:

a valve plate extending across said chamber,

a cylindrical strainer body mounted atop said valve plate, said strainer body including perforations for conducting flushing medium, an insertion mounted for movement relative to said valve plate and strainer body and comprising:

a lid which is positioned to be acted upon by the action of the flushing medium and urged into contact with an end of said strainer body disposed remotely of said valve plate, and

a valve closing plate operably connected to said lid and



disposed below said valve plate for opening the valve when said lid is urged against said strainer body, and

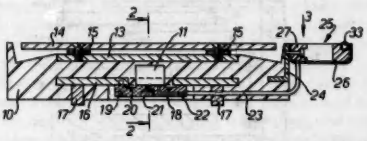
valve closing means for normally urging said lid away from said strainer body and urging said valve closing plate to a position closing said valve and being yieldable in response to the action of the flushing medium against said lid to permit movement of said lid to open said valve plate and contact said strainer body.

4,184,555

WEIGHING APPARATUS

Thomas F. Maltby, The Red House, Selbourne, Hampshire; Robert C. Maltby, Doscombe Cottage, Hawkley, Hampshire, and Alan W. Wakefield, 13 N. Stroud La., Stroud, Petersfield, Hampshire, all of England

Filed Jul. 18, 1978, Ser. No. 925,679
Claims priority, application United Kingdom, Jul. 21, 1977, 30688/77
Int. Cl.[2] G01G *5/04, 21/10*
U.S. Cl. 177—208 **11 Claims**

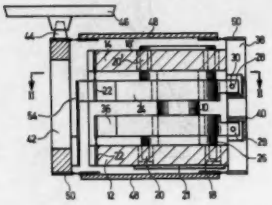


1. A weighing apparatus comprising a resilient body formed of an elastomeric material, a closed cavity provided in said body, a fluid contained in said cavity, conduit means connecting the cavity to indicator means for indicating changes in volume of the cavity when the body suffers changes due to compression forces applied thereto by the member being weighed, said body having a resilient metal plate or bars fixed to an upper surface thereof, a resilient metal load support plate mounted on said first mentioned plate or bars and a further resilient metal plate embedded in the body and spaced below the first mentioned plate or bars and to which reaction forces are applied during weighing.

4,184,556
BALANCE WITH ELECTROMAGNETIC COMPENSATION

Peter Kunz, Tann-Ruti, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Oct. 19, 1978, Ser. No. 952,636
Claims priority, application Switzerland, Dec. 6, 1977, 14889/77
Int. Cl.² G01G 7/02
U.S. Cl. 177—210 EM **7 Claims**

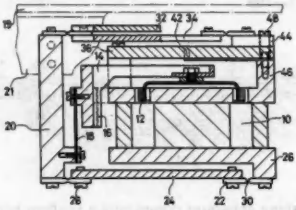


1. In electromagnetically compensated weighing apparatus including a magnetic circuit comprising a permanent magnet having two poles, and a pole shoe associated with each pole, one of said pole shoes bounding an air gap in said circuit; an induction coil mounted for movement in said air gap; a load carrier movable relative to said magnetic circuit under a carried load; and force transmitting means connecting said coil to said carrier for balancing the force exerted by said carried load on the load carrier by a force generated by current flowing in said coil, the improvement in said force transmitting means which comprises a force transmitting member fastened to said coil, at least a major portion of said force transmitting member being confined in a space defined between said air gap and the other pole shoe.

4,184,557
TOP LOADING BALANCE

Peter Kunz, Tann-Ruti, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Oct. 17, 1978, Ser. No. 952,075
Claims priority, application Switzerland, Mar. 8, 1978, 2503/78
Int. Cl.² G01G 3/08
U.S. Cl. 177—229 **6 Claims**



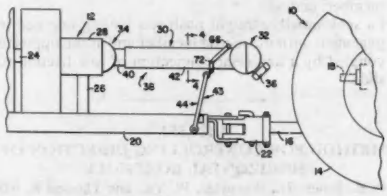
1. In a top-loading balance including a support member, a load carrier member, linking means linking said load carrier member to said support member in a parallelogram linkage, and indicating means for indicating the presence of a load carried by said load carrier member, said linking means including a plurality of links and a plurality of flexible connectors associated with each link, each connector defining a pivot axis and connecting the associated link with one of said members for movement of said link about said pivot axis, the improvement in said linking means which comprises:

(a) said plurality of links including three plate-shaped, rigid links,
(b) a first one of said three links being contiguously adjacent a second link and remote from the third link,
(c) three of said flexible connectors being associated with each of said three links, and
(d) adjusting means for transversely adjusting the position of at least one of the pivot axes defined by said three connectors.

4,184,558
SUPPORT FOR A PTO HOOKUP ASSEMBLY

Harold E. de Buhr; Merlyn D. Bass, both of Ottumwa, and Ronald N. Grimstad, Centerville, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 15, 1978, Ser. No. 905,725
Int. Cl.² B60D 1/08; F16D 3/00
U.S. Cl. 180—14 R **10 Claims**



1. In an implement having a forwardly extending tongue adapted to be connected to the drawbar of a towing tractor and a drive shaft adapted to be connected to the tractor PTO output shaft by a PTO hookup assembly including a front universal joint connectible to the tractor PTO output shaft, a rear universal joint connected to the implement drive shaft and a tubular outer body portion between the front and rear universal joints, the improvement comprising:

a support member pivotally mounted on the implement tongue generally below the PTO hookup assembly for swinging between a lower inoperative position and a generally upright position;

and a retainer member swingably mounted on the support member and including a generally C-shaped hook element having a lateral opening between the opposite ends of the hook element slightly wider than the diameter of the outer body portion of the hook-up assembly, said hook element being adapted to accommodate passage of the body portion when the retainer member is shifted to a generally vertical position so that the opening of the hook element is disposed diametrically of the body portion, said retainer member being shiftable to a canted position wherein the opening of the hook element in a diametrical direction relative to the body portion is less than the diameter of the body portion, so that the body portion cannot pass through the opening and be withdrawn from the hook element when the retainer member is in its canted position, to selectively lock the hook-up assembly to the support member.

4,184,559
SELF-PILOTING LAWN MOWER

Hans A. Rass, 303 St. Lawrence Ave., Beloit, Wis. 53511

Filed Oct. 17, 1977, Ser. No. 842,970
Int. Cl.² B62D 1/26
U.S. Cl. 180—131 **2 Claims**

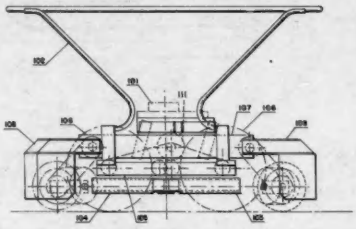
1. A powered lawn mower incorporating mechanical piloting and sensing mechanism so as to direct the lawn mower along a series of straight parallel courses and to cause the lawn mower travel direction to be reversed at the end of each said course, comprising

engine means linked to drive a pair of counter-rotating drive gears,

a planetary differential coupling, the input of which is engageable alternatively with one or the other of said counter-rotating drive gears, with

said planetary differential fitted with two output shafts, one of which is coupled to a rotatable sensor brush, and the other of which is coupled to a drive wheel on which the lawn mower is mounted, such that torque is transmitted to the drive wheel only when the said sensor brush encounters resistance torque, in which

said planetary differential is mounted on a guide frame, which guide frame is pivotally rockably mounted to a



wheel frame on which the drive wheel is rotatably mounted, with the input of said planetary differential engageable with the counter-rotating drive gears, such that in a first position of the guide frame, the input of the differential coupling is engaged to a first of said counter-rotating drive gears, and in a second position of the guide frame, the said input is engaged to the second of the two counter-rotating drive gears, so as to result in the rotation of the drive wheel by an output shaft of the differential coupling in a first direction, in the said first position of the guide frame; and to result in the rotation of the drive wheel by said output shaft in the reverse direction of said first direction, in the second position of the guide frame.

4,184,560

TWO-CIRCUIT STEERING ARRANGEMENT FOR MOTOR VEHICLES

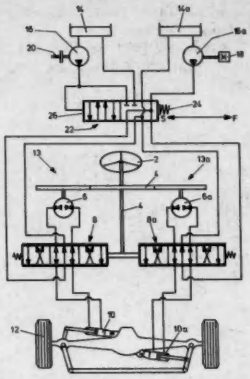
Werner Tischer, Boebingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 935,947

Int. Cl.² B62D *5/08*

U.S. Cl. 180—133 **3 Claims**

1. In a fluid steering system for a motor vehicle having an engine (18), including two steering circuits (13 and 13*a*), wherein each of the circuits has an reservoir (14, 14*a*) for operating fluid, a high pressure pump (16, 16*a*), a manually driven pump (6, 6*a*), a control valve (8, 8*a*), and a servomotor (10, 10*a*) operated by said pump, said high pressure pumps being respectively driven by the engine and the vehicle travel, the improvement residing in reversing valve means (22) for disconnecting the vehicle driven high pressure pump (16) from the control valve (8) associated therewith during standstill of the motor vehicle and connecting the engine driven pump (16*a*) to both of the control valves, and means responsive to a predetermined output pressure from the vehicle driven high pressure pump during travel of the vehicle for displacing the



reversing valve means to a travel position connecting each of the two high pressure pumps with its respective control valve.

4,184,561

STEERABLE AXLE ASSEMBLY FOR A FLOOR-TYPE INDUSTRIAL VEHICLE

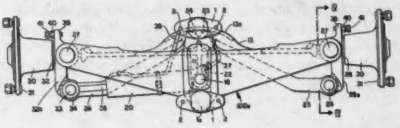
Theodor Abels, Aschaffenburg; Guenther Honecker, Klein-Welzheim, and Bernhard Goetz, Aschaffenburg, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Hollriegelskrueth, Fed. Rep. of Germany

Filed Sep. 26, 1977, Ser. No. 836,847

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642904

Int. Cl.² B62D *5/10*

U.S. Cl. 180—155 **6 Claims**



1. A steering axle assembly for a floor-type industrial vehicle, preferably a fork-lift truck, comprising:

an elongated axle body adapted to be secured to said vehicle and having a box-shaped profile in a plane perpendicular to the longitudinal dimension of the axle body, whereby said body forms a housing, said housing being formed with a substantially horizontal upper wall, a substantially horizontal lower wall and a substantially vertical wall interconnecting said upper and lower walls along one side of said housing, the opposite side of said housing being open;

a steering knuckle pivotally mounted in said housing;

a pair of wheel axles pivotally mounted on said housing at opposite ends thereof;

respective tie bars pivotally connected to said knuckle and to said axles, said tie bars being received at least in major part within said housing

a hydraulic piston and cylinder for displacing said knuckle and said tie bars and received at least in part within said housing; and

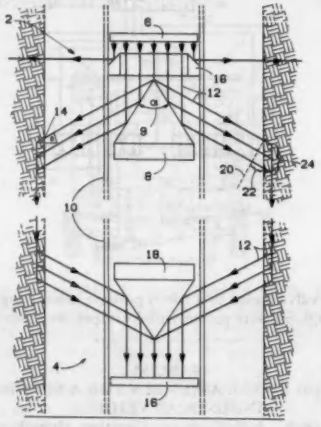
a pivot pin spanning said open side of said housing between said upper and lower walls, said substantially vertical wall having an outward bulge opposite said pin, said knuckle being swingably mounted on said pin and reaching into said bulge.

4,184,562

MULTI-DIRECTIONAL ASSEMBLIES FOR SONIC LOGGING

Barkev Y. Bakamjian, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 14, 1977, Ser. No. 851,088
Int. Cl.[2] G01V 1/40
U.S. Cl. 181—104 14 Claims



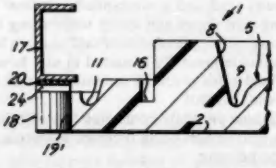
1. A multi-directional electroacoustic transmitting and receiving assembly comprising an electroacoustical transducer element having a planar acoustical energy transmitting surface and an essentially symmetrical conical reflector positioned substantially centrally in the path of acoustical energy transmitted from said planar surface, with the axis of said symmetrical conical reflector being essentially perpendicular to said planar surface and substantially parallel to the direction of propagation of said acoustical energy from said planar surface, wherein the angle of said conical reflector surface relative to its axis varies from the apex to the skirt of said reflector, thereby forming a curved surface whereby the reflected energy is reflected over a range of directions, all of said directions being away from the plane of said acoustic energy transmitting surface.

4,184,563

PLANAR DIAPHRAGM AND SUPPORTING FRAME ASSEMBLY

José J. Bertagni, 1001 Uriburu, 1643 Beccar, Argentina

Filed Dec. 21, 1978, Ser. No. 971,734
Int. Cl.[2] G10K 13/00; H04R 7/00
U.S. Cl. 181—171 6 Claims



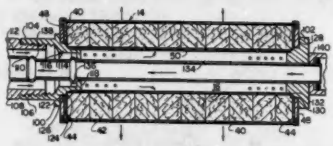
1. A substantially planar diaphragm and supporting frame assembly, preferably for loudspeakers, where on the rear face side of said diaphragm there is an asymmetrically shaped sound producing portion defining the central portion of said diaphragm, which central portion is surrounded by a marginal portion including spaced-apart teeth-like projections which define the periphery of said marginal portion and an endless channel in said marginal portion betwen said teeth-like projections and said central portion, a resilient cushion-like damping washer having two opposite faces one face of which is linked to said teeth-like projections and the other face being linked to said supporting frame.

4,184,564

COMBINATION MUFFLER AND AIR FILTER

John B. Trainor, 2375 S. Commerce, Walled Lake, Mich. 48088

Division of Ser. No. 828,744, Aug. 29, 1977, Pat. No. 4,134,472.
This application Jan. 15, 1979, Ser. No. 3,591
Int. Cl.[2] F01N 1/24, 7/18
U.S. Cl. 181—230 2 Claims



1. A combination muffler and air filter for use in combination with a pneumatic tool, said tool having an air intake tube and an exhaust chamber, said combination muffler and air filter comprising:

a canister having an axial opening extending therethrough, said canister comprising:

a perforated cylinder,

annular members with muffling and filtering properties stacked in said perforated cylinder, and

a closure disc on each end of said perforated cylinder;

a rear retainer cap on one end of said canister;

a front retainer cap on the other end of said canister,

said front cap having a rearwardly disposed projection containing a housing having a chamber, said housing having a back wall with spaced discharge ports communicating said exhaust chamber in said pneumatic tool with said axial opening through said canister,

said front cap also having means thereon for detachably connecting said muffler and filter to said pneumatic tool; and

a central tubular member slidably extending through said front and rear retainer caps and said rearwardly disposed projection,

said member having means on the forward end thereof for sealably engaging said intake tube of said pneumatic tool,

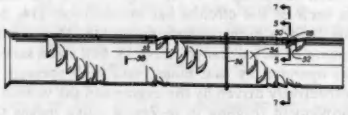
whereby air exhausted from said pneumatic tool is filtered and muffled before being releasesd to the atmosphere.

4,184,565

EXHAUST MUFFLER

Robert C. Price, 313 E. Fairchild, Midwest City, Okla. 73110, and V. C. Harris, 5501 N. Brunson, Oklahoma City, both of Okla. 73112

Filed Dec. 15, 1978, Ser. No. 969,970
Int. Cl.[2] F01N 1/10, 7/14, 7/18
U.S. Cl. 181—252 12 Claims



1. A core for an exhaust muffler comprising:

an elongated tube of from 1¼ to 2¾ inches in diameter having first and second ends and having a plurality of circumfer-

entially spaced spiral rows of slots therein, said slots each extending transversely with respect to the longitudinal axis of the tube, and each of said slots defining an open space lying in a plane extending substantially normal to the longitudinal axis of the tube, and said tube further including:

arcuate upper slot edges at the radially outer sides of said open spaces;

lower slot edges at the radially inner sides of said open spaces and having a length of from about 1 to 1¼ inch, said upper and lower edges being spaced from each other a distance of from about 3/16 to ¼ inch at their point of greatest separation; and

substantially flat portions adjacent each of said lower slot edges and each terminating at the respective adjacent lower slot edge;

a first baffle bar having a transverse width not exceeding about one-fourth the diameter of the tube extending diametrically across the inside of the tube at a location between the longitudinal center of the tube and the first end thereof; and

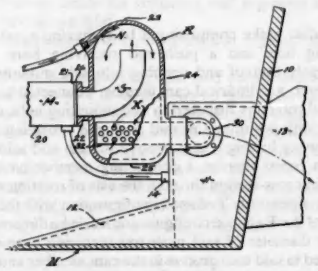
a second baffle bar having a transverse width not exceeding about one-fourth the diameter of the tube extending diametrically across the tube at a location between the longitudinal center of the tube and the second end thereof, said second baffle bar extending in a diametric plane of the tube which extends normal to the first baffle bar.

4,184,566

MARINE ENGINE NOISE SUPPRESSOR

Kenneth R. Baker, Woodland Hills, and Robert T. DeVault, Simi Valley, both of Calif., assignors to Maritec Corporation, Canoga Park, Calif.

Filed May 10, 1978, Ser. No. 904,392
Int. Cl.[2] F01N 1/14
U.S. Cl. 181—261 **20 Claims**



1. An internal combustion engine exhaust noise suppressor, including; a vertically disposed singlewalled riser forming an expansion chamber with a dome and an opposite lower portion, an exhaust stack entering from the engine exhaust and into the chamber and having an opening disposed to discharge the exhaust upwardly against an interior wall of said riser dome, water injection means directing water over the interior wall of the dome of the riser for cooling and primary noise suppression by vaporization forming a cushioning layer, and a muffler element for secondary noise suppression and extending into the lower portion of the chamber to receive the exhaust gases and water vapors caused by the exhaust heat acting upon said water injection and opened to atmosphere.

4,184,567

FIRE ESCAPE DEVICE WITH ROPE LOOP CLAMP

Nicholas A. Rabelos, 7 Armour La., Riverdale, Ga. 30274, assignor to Thomas G. Clark; Kenneth B. Clary; J. Melvin England; Charles O'Brien, Jr. and Nicholas A. Rabelos, all of Atlanta, Ga.

Filed Sep. 1, 1978, Ser. No. 938,786
Int. Cl.[2] A62B 1/14
U.S. Cl. 182—5 **8 Claims**

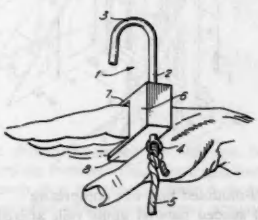
1. An elongated flexible element having an end anchorable to a building structure, and having a length which is selected to be sufficient to reach a lower, safe support level beneath a point of anchoring to the building structure, slide and sling assembly means detachably mounted on the flexible element for longitudinal movement therealong, the slide and sling assembly means including a clamp means arranged for clampingly engaging the flexible element and forming a loop in the element, and further including a plate partially forming the clamp means and provided with a substantially planar surface, the clamp means also including a pad provided with a substantially planar face arranged substantially parallel to and opposite of the planar surface of the plate, and a manually operable screw-threaded means interconnecting the plate and pad for moving the plate and pad toward and away from one another, with the surface and face of the plate and pad, respectively, remaining substantially parallel to one another during such movement, the flexible element being slidably arranged between the plate and pad and looped around the screw-threaded means for being selectively clamped between the plate and pad by the screw-threaded means.

4,184,568

SAFETY DEVICE FOR LADDER CLIMBING

John Hillier, R.R. #1, Camlachie, Ontario, Canada (N0N 1B0)

Filed Nov. 27, 1978, Ser. No. 963,888
Claims priority, application Canada, Jan. 20, 1978, 295355
Int. Cl.[2] A62B 1/16; E06C 7/18
U.S. Cl. 182—8 **24 Claims**



1. A device for releasably securing to a person's hand hook means of a safety device for climbing ladders or the like, said device being of a generally "U"-shaped configuration formed by a base and two arms protruding same, said base being secured to a stem portion of said hook means such that the stem

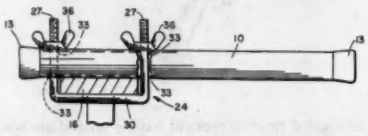
portion extends generally perpendicularly to a plane defined by the "U", said two arms being resiliently yieldable in a direction of spreading apart the free ends thereof, the spacing between said two arms being selected such that inside surfaces of said arms are capable to resiliently engage the back and the palm of a person's hand, respectively.

4,184,569

LADDER STANDOFF AND RIDGE POLE HOOK

Joseph N. O. Grenier, 358-360 Queensway South, Keswick, Ontario, Canada (L4P 2C2)

Filed Nov. 4, 1977, Ser. No. 848,580
Claims priority, application Canada, Jun. 15, 1977, 427241
Int. Cl.[2] E06C *7/48, 1/36*
U.S. Cl. 182—206 **8 Claims**



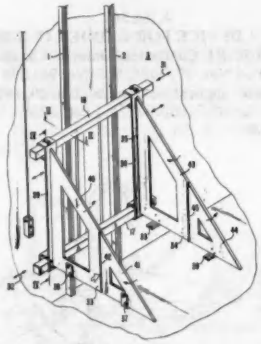
1. A ladder standoff and ridge pole hook comprising in combination a pair of bars of predetermined length, said bars having spaced bores transversely therethrough; a clamp for each bar having a bridging means to straddle a respective rail of a ladder at one side of the rail and each bridging means having fastening means to pass through the spaced bores of a respective bar disposed on the opposite side of said rail to clamp said bar thereto, whereby a bar may be clamped to each rail of a ladder and extending outwardly of the plane thereof for engaging a support surface or to hook over a roof ridge-pole.

4,184,570

WALL-MOUNTED FORK LIFT

James W. Edwards, 819 NW. 49th, Seattle, Wash. 98107

Filed Apr. 28, 1978, Ser. No. 901,115
Int. Cl.[2] B66B *9/00*
U.S. Cl. 187—6 **2 Claims**



1. A wall-mounted fork lift, comprising

a pair of spaced parallel guide rails affixed to a wall and extending substantially vertically thereon;

a first pair of spaced parallel support members movably mounted on the guide rails for movement therealong, said support members extending perpendicularly to said guide rails;

motive means coupled to the first pair of support members for selectively moving said support members along said guide rails;

third and fourth support members extending between said first pair of support members perpendicularly thereto and movably mounted thereon for independent movement therealong in directions perpendicular to said guide rails; and

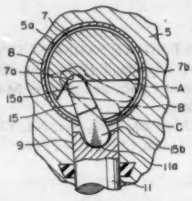
first and second support arms hingedly affixed to the third and fourth support members, respectively, for movement to a rest position substantially next-adjacent said third and fourth support members in close proximity with the wall and to an operating position substantially perpendicular to said wall, said support arms having pallet-supporting means extending therefrom for supporting a loaded pallet between them, each of said first and second support arms having a first part hingedly affixed to the corresponding one of the support members and a second part hingedly affixed to the first part.

4,184,571

DISC BRAKE

Yasuo Karasudani, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Dec. 14, 1977, Ser. No. 860,320
Claims priority, application Japan, Dec. 20, 1976, 51-170666
Int. Cl.[2] F16D *55/30*
U.S. Cl. 188—72.7 **1 Claim**

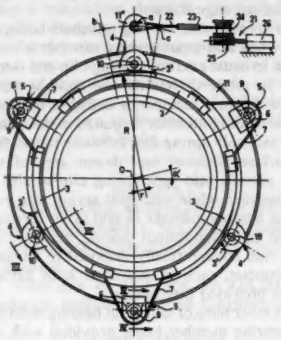


1. A disc brake comprising a body having a cam member mounting hole and a push rod receiving bore extending transversely thereof and opening into said mounting hole, a brake lever, a cylindrical cam member connected to the brake lever and rotatably disposed in said mounting hole, a push rod reciprocably positioned in said push rod receiving bore, said cam member having a cam groove therein and said push rod having a recess therein, a connecting member having, when viewed in cross-section through the axis of rotation of the cam member, a generally T-shaped configuration with the cross-bar portion of the T-shaped configuration having a dimension larger than the diameter of said push rod receiving bore and being positioned in said cam groove in the cam member and the other end thereof engaging in said recess in the push rod to convert rotational movement of the cam member into linear movement of the push rod, said cam member further having a connecting member receiving groove contiguous to the cam groove in the cam member and having a configuration such that the connecting member can be received wholly within the outer periphery of the cam member, and a dust protecting means disposed between the cam member and the body around the mounting hole, the bottom of said connecting member receiving groove, when viewed in cross-section transverse to the axis of rotation the cam member, being defined by two generally straight lines extending to the circumference of the cam member from said cam groove, said lines being at an obtuse angle with the apex at said cam groove.

4,184,572
DEVICE FOR TEMPORARILY RIGIDLY UNITING A FREE CIRCULAR ELEMENT WITH A FIXED CIRCULAR ELEMENT

Pierre Poubeau, Le Pecq, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Apr. 27, 1978, Ser. No. 900,551
Claims priority, application France, Apr. 29, 1977, 77 13117
Int. Cl.² F16D 51/04
U.S. Cl. 188—74 **7 Claims**



1. A device for temporarily holding fast the rotor of a satellite momentum wheel with respect to the stator of the momentum wheel comprising

spaced axially aligned circular elements respectively secured to said rotor and said stator, said elements having wedging surface means,

equidistant circular segments having surface means to engage said wedging surface means of said circular elements and tangential ramps adapted to cause each of said segments to come to rest in wedged relationship simultaneously with both of said circular elements for holding them fast and in spaced relationship both radially and axially with respect to each other,

a rigid ring having bearing thrust means for exerting local thrust against said ramps of said segments,

elastic restoring means for returning said segments to their non-thrusting position,

angular urging means for exerting angular urge on said rigid ring,

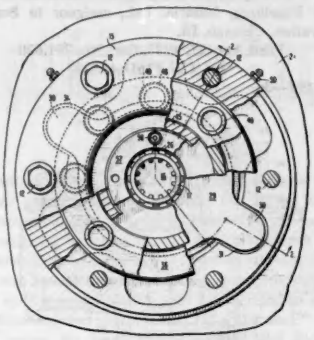
said segments, said rigid ring, and said elastic means being arranged in respect to each other so that upon said rigid ring being urged angularly by said angular urging means in a direction to cause said local thrust means thrusting against said segment ramps to cause said segments to move radially with respect to said circular elements, to rigidly unite said circular elements by wedging; and upon said rigid ring being urged angularly in the opposite direction, to unwedge said circular elements and said segments to disunite said circular elements.

4,184,573
DOUBLE-ACTING DISC BRAKE HAVING FLOATING CYLINDER HEAD

Jack E. Bricker; Rene G. Galmiche, both of Hagerstown, Md., and Donald R. Pottorff, Mercersburg, Pa., assignors to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Oct. 5, 1978, Ser. No. 948,743
Int. Cl.² F16D 65/24
U.S. Cl. 188—170 **12 Claims**

11. A disc brake comprising a variable configuration disc sub-assembly including a housing section, a rotational shaft journaled on the housing section and alternating rotor and stator discs in a dry chamber of said housing section with the rotor discs connected to said shaft and the stator discs connected to said housing section, and a standardized hydraulic operating module for the disc brake including a module housing section, means coupling the module housing section to the sub-assembly housing section in end-to-end relationship, the module housing section having a bore in substantial registration with said dry chamber, an annular interface element in said bore and abutting an end face of the sub-assembly housing section, a disc brake operating piston in said bore and spaced axially from the annular interface element and having a reduced diameter portion engaged through the bore of the interface element and abutting an endmost disc of said sub-assembly in said dry chamber, spring means in the module housing section engaging said piston and biasing it toward engagement with said endmost disc, means to deliver piston cushioning fluid at a first pressure into a space between said piston and said interface element, and means to deliver disc brake operating fluid at a pressure above the pressure of the cushioning fluid into a space between said piston and an end wall of said bore in the module housing section at the end of the piston away from the interface element.



4,184,574
INTERNAL SHOE DRUM BRAKES

Michael J. England, West Midlands, England, assignor to Girling Limited, Birmingham, England

Filed May 25, 1978, Ser. No. 909,472
Claims priority, application United Kingdom, May 25, 1977, 21958/77
Int. Cl.² F16D 65/08
U.S. Cl. 188—341 **7 Claims**

1. An internal shoe-drum brake for vehicles comprising arcuate shoes carrying friction linings for engagement with a rotatable drum, each shoe having an actuated shoe-end abutment and a non-actuated shoe-end abutment, actuating means acting on said actuated shoe-end abutments to urge said shoes into engagement with said drum, said actuating member incorporating an actuating abutment, drag-taking abutments with which said non-actuated shoe-ends co-operate, and a separate thrust transmitting member separate from said shoes, said actuating means, and said drag-taking abutments and interposed between at least one of said shoe-end abutments of at

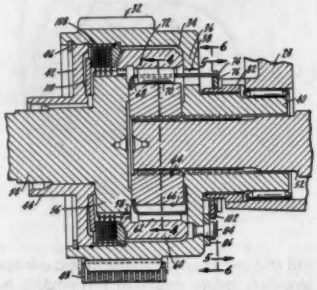
least one of said shoes and a corresponding one of the other of said abutments which together constitute a corresponding pair, said thrust transmitting member having a planar face engaging slidably with one of said abutments of said pair and an arcuate face, and the other of said abutments has a complementary recess of arcuate outline in which said arcuate face is received for relative arcuate movement.

4,184,575

TORQUE TRANSFER MECHANISM

Mark J. Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 27, 1977, Ser. No. 791,620
Int. Cl.[2] F16D *43/04*
U.S. Cl. 192—36 **10 Claims**



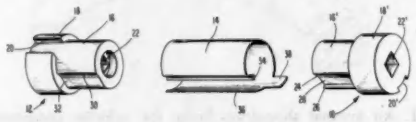
1. In power transmission apparatus including a housing, first and second elements supported for rotation in said housing, wedging means subject to displacement between a disengaged position and two positions in wedging engagement with said elements, means for biasing said wedging means toward one of said engaging positions, and means for blocking displacement of said wedging means to the other of said engaging positions; the improvement wherein said blocking means comprises a movable blocking member, and means for moving said blocking member into position to effect said blocking and for reinforcing said biasing of said wedging means toward said one engaging position.

4,184,576

POWER DRIVEN FLEXIBLE SHAFT CLUTCH ASSEMBLY

Walter Kulischenko, East Brunswick, and William C. Ellis, Bridgewater, both of N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 3, 1978, Ser. No. 883,110
Int. Cl.[2] F16D *7/02*
U.S. Cl. 192—41 R **1 Claim**



1. In a system for coupling power from a rotating output shaft of a high speed power source to a driven member to be driven thereby through rotatable flexible shaft means having a plurality of layers of closely coiled wire wound over a mandrel, each of said layers of wire being wound in alternately opposing directions, the improvement therewith of a 3-component clutch assembly for controllably coupling said power from said rotating output shaft; said 3-component clutch assembly providing positive control of directional rotation of said flexible shaft means, said 3-component clutch assembly comprising

an input bearing member operably connected to one end of said flexible shaft means, other end of said flexible shaft means being connected to said rotating output shaft,

an output bearing member operably connected to said driven member, said input and output bearing members having detent areas thereon,

a split spring clip operably interconnecting said bearing members, said split spring clip having a lip disposed across a longitudinal edge thereof,

said detent areas of said bearing members being engaged by said lip when said input bearing member is rotated in one direction to cause said split spring clip and output bearing member to rotate therewith, and another detent area of said input bearing member is engaged by said lip when said input bearing member is rotated in the other direction to cause said split spring clip to rotate therewith whereby a flat surface adjacent said detent area of said output member permits said split spring clip to slip about said output member while said split spring clip rotates with said input bearing member in said other direction,

each of said input and output bearing members comprising an inner hub concentrically disposed to an outer hub of larger diameter, each of said outer hubs having a transverse slot provided thereacross,

each of said inner hubs of said input bearing member and said output bearing member being provided with said detent areas, said detent area of said inner hub of said input bearing member comprising a pair of opposed substantially identical downwardly sloping faces, said downwardly sloping faces providing a flat surface therebetween, and

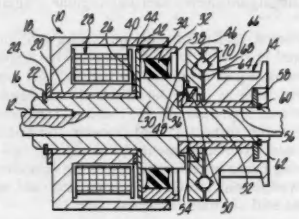
said detent area of said output bearing member comprising a single downwardly sloping face terminating in a flat surface merging with outer surface of said inner hub.

4,184,577

ELECTROMAGNETIC CLUTCH WITH TWO STAGE TORQUE BUILDUP

Donald L. Miller, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Mar. 31, 1978, Ser. No. 892,239
Int. Cl.[2] F16D *27/10*
U.S. Cl. 192—84 C **6 Claims**



1. An electromagnetically operated clutch-brake comprising:

a first rotatably mounted drive member;

a second rotatably mounted drive member, in axial alignment with said first drive member;

a ferromagnetic inner body drivingly connected for rotation with said first drive member, said inner body including radially spaced inner and outer poles each having a radially extending pole face;

a ferromagnetic armature member drivingly connected to said second driven member, said armature having a radial face disposed opposite and extending radially in correspondence with said inner body pole faces;

means mounting said inner body and armature for relative

axial movement into and out of engagement of said inner body pole faces;

electromagnetic operator means for controllably causing magnetic flux to pass through said inner body pole faces and said armature to draw said inner body and armature into engagement by said relative axial movement by magnetic attraction therebetween to controllably establish a rotative driving connection between said first and second drive members;

means mounting said inner and outer poles of said inner body in an axially offset position relative each other, said means including a connection rotatably joining said inner and outer poles allowing relative axial movement therebetween, whereby a two-stage engagement of said pole faces with said armature radial face is provided by initial engagement of said pole face nearest said armature clutch face and a subsequent engagement of said pole face remote from said clutch face, to thereby produce a delayed torque buildup in said clutch brake.

4,184,578

DIAPHRAGM SPRING CLUTCHES

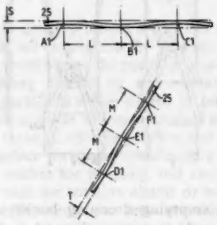
John B. Moore, and Richard A. Nix, both of Leamington Spa, England, assignors to Automotive Products Limited, Leamington Spa, England

Filed Jun. 29, 1978, Ser. No. 920,351

Claims priority, application United Kingdom, Jul. 21, 1977, 30594/77

Int. Cl.² F16D *13/50*

U.S. Cl. 192—89 B **6 Claims**



1. A diaphragm spring clutch cover assembly comprising a pressure plate, a cover, a diaphragm spring having a plurality of radially inwardly directed fingers and acting between a first annular fulcrum on the pressure plate and a second annular fulcrum on the cover and cushioning means in one of the annular fulcra including a wavy ring having undulations which extend parallel to the axis of the clutch, wherein some of the undulations are of greater amplitude than others.

4,184,579

CONVEYOR LOAD STOP AND RELEASE APPARATUS

Edward T. Kantarian, 4325 Arlington Dr., Royal Oak, Mich. 48072, and Donald F. Staub, 814 Fox Run, Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 838,879, Mar. 6, 1978. This application Apr. 28, 1978, Ser. No. 900,878

Int. Cl.² B65G *13/00*

U.S. Cl. 193—35 A **5 Claims**

1. Apparatus for selectively by-passing, stopping, and releasing loads traveling on a conveyer, comprising,

a case mountable on a conveyer,

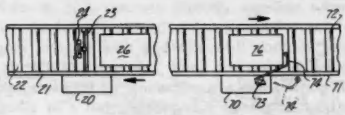
a stop shaft pivotally mounted on said case; said stop shaft having an inner portion within said case and an outer portion extending from said case for positioning relative to the load carrying surface of a conveyer;

a stop arm on said stop shaft outer portion movable by angular motion of said shaft in one direction to a stopping position above the load carrying surface of a conveyer to stop a load and movable by angular motion of said shaft in the opposite direction to a non-stopping position not above the load carrying surface of a conveyer to not stop a load;

a stop lever on said stop shaft inner portion having a stopping position and a non-stopping position corresponding to said stop shaft and said stop arm;

first spring means resiliently angularly biasing said stop lever, said stop shaft, and said stop arm in one of their stopping and non-stopping positions;

a blocker leg having one end pivotally mounted on said case and an outer end swingable to engage said stop lever to



support said stop lever, said stop shaft, and said stop arm in their stopping position against the impact and force incurred in stopping a load on a conveyer;

said blocker leg being swingable to a position not blocking said stop lever to allow said stop lever, said stop shaft, and said stop arm to move to their non-stopping position;

second spring means biasing said blocker leg to one of its said blocking and not-blocking positions; and

power means for selectively swinging said blocker leg against said second spring means between its blocking and non-blocking positions relative to said stop lever.

4,184,580

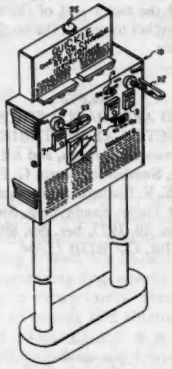
COIN OPERATED BATTERY CHARGER AND CHARGING SYSTEM CHECK

Austin J. Ellis, Jr., 528 K St., Rio Linda, Calif. 95673

Filed Jun. 15, 1977, Ser. No. 806,669

Int. Cl.² G07F *17/00*

U.S. Cl. 194—1 R **3 Claims**



1. An electrical checking or charging station comprising charging means, coin operated means for actuating said charging means, a voltage checking means and terminal post means associated with said voltage checking means and said charging means to be connected to a vehicle for testing and charging, and a safety switch connected between said first coin operated means and said charging unit to selectively engage and disengage said charging unit, a voltage selection means connected to said charging means to select a desired voltage, and a second

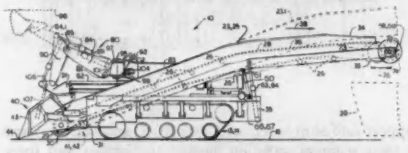
coin operated means provided to dispense screw charging posts for use in side terminal batteries.

4,184,581

LOADING APPARATUS FOR MINES

Richard Crawshay, North Vancouver, and Malcolm D. Rowswell, Mississauga, both of Canada, assignors to Canadian Mine Services Limited, Vancouver and Kerr Addison Mines Ltd., Toronto, both of, Canada

Filed Apr. 1, 1977, Ser. No. 783,712
Int. Cl.[2] B65G *65/04*
U.S. Cl. 198—308 **32 Claims**



25. A loading apparatus including a ground supported vehicle body adapted for positioning where desired, an inclined conveyor assembly extending upwardly and rearwardly along a centrally disposed longitudinal feed axis thereof from a front of the vehicle, and a hopper means adjacent the front of the vehicle adapted to direct material onto the conveyor, the apparatus being further characterized by an excavating assembly including:

(a) a guide means mounted on the vehicle body and having a guide axis disposed generally parallel to and displaced laterally from the feed axis of the conveyor assembly when viewed from above,

(b) a carrier means supported by the guide means, and means to move the carrier means along the guide axis on one side of the conveyor assembly,

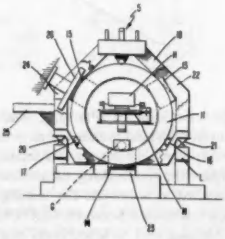
(c) a hoeing assembly having a bucket and first and second arms, the arms being connected and having respective inner and outer ends, and means to move the first and second arms relative to the carrier means, the first arm being connected to the carrier means at a location within a vertical plane containing the feed axis so as to be disposed symmetrically of the conveyor, and the outer end of the second arm being connected to the bucket to permit the bucket to sweep material onto the hopper.

4,184,582

METHODS AND APPARATUS FOR PRODUCING ELECTRICAL BATTERIES

Anders Borjesson, Alvangen, Sweden, and Alf Narbro, deceased, late of Gothenburg, Sweden (by Karin G. E. Narbro, Lennart Narbro, and Anna K. K. Narbro, legal representatives), assignors to Aktiebolaget Tudor, Sundbyberg, Sweden

Filed Jun. 10, 1977, Ser. No. 805,584
Int. Cl.[2] B23B *13/04*
U.S. Cl. 198—339 **3 Claims**



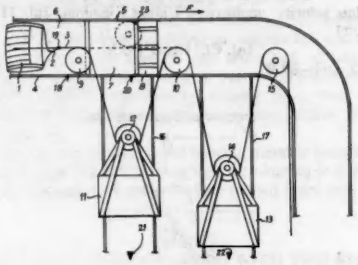
1. In a method for producing electrical series for electrical accumulators which includes the steps of sequentially displacing electrodes to various stations along a work cycle and connecting the electrodes to connector bars, the improvement wherein the electrode series belonging to a given battery are placed in a cassette so as to travel jointly, and the cassette is displaced to the work stations in a vertically oriented, circular closed path of travel wherein the cassette is displaced in opposite directions along the path of travel, the displacement being carried out in stages, wherein the movements in one direction are of equal magnitude and the movements in the opposite direction are of equal magnitude but unequal to those in said one direction.

4,184,583

DEVICE FOR USE IN THE EMPTYING OF DREDGING BUCKETS

Michel Gauthier, Saint-Renan; Francois Le Foll, and Christian Charles, both of Brest, all of France, assignors to Centre National pour l'Exploitation des Oceans, Paris, France

Filed Dec. 15, 1977, Ser. No. 860,895
Claims priority, application France, Dec. 17, 1976, 76 38038
Int. Cl.[2] E02F *3/14*
U.S. Cl. 198—703 **10 Claims**



1. A device for emptying dredging buckets attached by cables to points spaced along a continuously moving endless dredging line, said device comprising:

substantially horizontally-extending first guide means for guiding movement of the buckets; and

means defining an emptying station associated with said guide means and including:

first and second bodies arranged to move in synchronism in opposite directions along generally-vertically extending paths between first and second positions, in the first positions the endless dredging line passing over said bodies in a substantially straight line parallel to said guide means, in the second positions the endless dredging line passing over said bodies and being moved by said bodies away from said guide means;

second guide means positioned between said first and said second bodies and cooperating with said bodies in said first positions to define a substantially straight path for guiding the endless dredging line;

means for controlling movement of said bodies so that said first body is in said first position and said second body is in said second position prior to arrival of a bucket at said emptying station, said first body being moved towards said second position, after the point of attachment of a bucket to the dredging line passes the first body, at a rate of speed sufficiently fast to substantially stop movement of the point of attachment at said second guide means; and

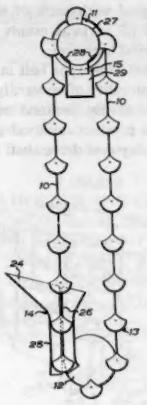
actuatable means associated with said first guide means for dumping a bucket when movement of its point of attachment is substantially stopped.

4,184,584

BUCKET ELEVATOR

Bengt L. A. Dehlen, Trelleborg, Sweden, assignor to Trelleborgs Gummifabriks Aktiebolag, Trelleborg, Sweden

Filed Jul. 12, 1977, Ser. No. 814,970
Claims priority, application Sweden, Jul. 16, 1976, 7608146
Int. Cl.[2] B65G 47/40
U.S. Cl. 198—706 4 Claims



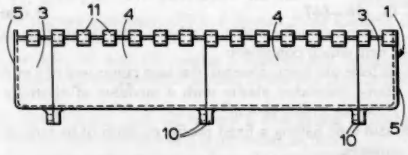
1. In a bucket elevator having a series of rotatably mounted buckets which are journalled for rotation about stub-shafts which are disposed above the point of gravity of the buckets, the buckets being carried by and extending between two spaced apart parallel traction chains or belts which are disposed to run over guide rollers and move the buckets along a path of travel through a loading station and a discharge station with a cam surface for engagement with a cam follower surface on each bucket for pivoting and emptying thereof, the improvement that the traction chains or belts are, at the discharge station, disposed to run up over guide rollers, said guide roller at the discharge station including a circular cam surface concentric with the chain or belt engaging surface of the guide rollers, and the cam follower surface of each bucket includes a corresponding arcuate cam follower surface, in order that the buckets abut and move with their arcuate cam follower surface against the circular cam surface of the guide rollers during the passage of the traction chains or belts over the guide rollers of the discharge station.

4,184,585

ENDLESS BAND CONVEYORS

George A. Harvey, Blakedown, England, assignor to U.M.E.C.-Boydell (Belting) Limited, Worcestershire, England

Filed Aug. 16, 1977, Ser. No. 825,049
Claims priority, application United Kingdom, Aug. 17, 1976, 34102/76; Nov. 24, 1976, 48935/76
Int. Cl.[2] B65G 17/36
U.S. Cl. 198—707 4 Claims



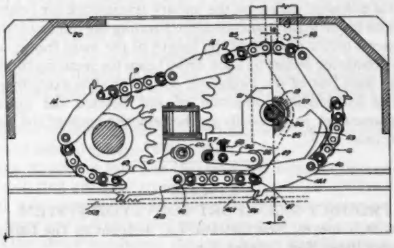
1. A load-bearing component for an endless conveyor band being of bucket form having two opposed end walls, two opposed side walls and a bottom wall, and comprising two moulded plastics end modules respectively formed to provide one of said end walls and portions of said side and bottom walls, and an intermediate moulded plastics module removably disposed between said end modules and formed to provide further portions of said side and bottom walls, said bottom wall portions of said end and intermediate modules having depending lugs at which are formed integrally therewith complementary connecting means comprising male and female formations constructed and arranged for force fit interengagement for releasably attaching said intermediate module to said end modules, said connecting means of said end modules enabling said end modules to be connected directly together when said intermediate module is removed, and said modules each having eye portions integral with said side wall portions, said eye portions at each said side wall being co-axial and being constructed and arranged for connecting the load-bearing component hingedly to a rod member of a conveyor band which supports the component in use.

4,184,586

ARTICLE TRANSLATION APPARATUS

Eric P. Dimmock, Parramatta, and Leslie P. Spurrier, Berala, both of Australia, assignors to Concrete Industries (Monier) Limited, New South Wales, Australia

Filed Aug. 3, 1978, Ser. No. 930,646
Claims priority, application Australia, Aug. 18, 1977, PD1298
Int. Cl.[2] B65G 19/26
U.S. Cl. 198—726 9 Claims



1. Article translation apparatus for moving a series of substantially identical articles contiguously supplied thereto, each having a rearwardly directed abutment face thereon, said apparatus comprising at least one endless conveyor loop having a series of article driving dogs equally spaced therearound, each dog having a downwardly extending driving spur adapted drivingly to engage said abutment face and further including a slot at its leading end, each dog being rotatably mounted at its trailing end to said conveyor loop, said loop having equally spaced stop means extending into each slot to set upper and lower limits to the permitted rotation of each dog, means for driving said conveyor loop, said loop being positioned above said articles with a lower flight substantially parallel with the direction of travel of said articles, the pitch of adjacent pairs of said dogs along said lower flight being slightly less than the pitch of said abutment faces such that as each lagging dog descends into a substantially horizontal position of driving engagement with the abutment face of one article, defined by said lower limit of rotation, the abutment face of the adjacent leading article is moved out of driving engagement with the adjacent leading dog.

4,184,587

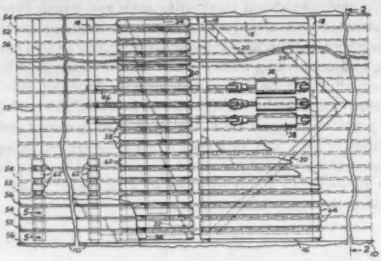
RECIPROCATING CONVEYOR AND MODULAR DRIVE UNIT THEREFOR

Olof A. Hallstrom, 1350 Hallstrom Rd., Tillamook, Oreg. 97141

Filed May 27, 1976, Ser. No. 690,438

Int. Cl.[2] B65G *25/00*

U.S. Cl. 198—750 2 Claims



1. For use with an elongated main conveyor frame having longitudinal side beams and longitudinally spaced transverse beams and a plurality of elongated conveyor slats of substantially the same length as the main frame, a separate modular slat drive unit comprising:

(a) a unitary framework including longitudinal and transverse frame members, the longitudinal frame members being substantially shorter than the main frame,

(b) a plurality of transverse drive beam members mounted on the unitary framework in longitudinally spaced relation for reciprocation in the longitudinal direction of the unitary framework,

(c) a source of drive power for each drive beam, interconnecting the associated drive beam and the unitary framework,

(d) attachment means on the unitary framework for connection to the main frame for incorporating the unitary framework into a portion of the length of the main frame, and

(e) connector means on each drive beam for securing thereto at least one of the elongated conveyor slats extending in the longitudinal direction of and beyond the unitary framework substantially to the opposite ends of the main frame.

4,184,588

PRODUCT TRANSPORT CONVEYOR SYSTEM

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Aug. 2, 1977, Ser. No. 821,137

The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.

Int. Cl.[2] B65G *21/18*

U.S. Cl. 198—778 5 Claims

1. A conveyor system for transport of a product over a long travel path within a relatively small volume and comprising:

a bi-directionally movable conveyor belt having a plurality of identical interconnected modular links and capable of movement through turns in horizontal and vertical planes, and capable of being driven by a sprocket rotatable about a vertical axis;

said plurality of modular links each having:

a first section terminating in first and second linking ends disposed along a conveyor axis;

a second section terminating in third and fourth linking ends disposed along said conveyor axis;

said second linking end of said first section being pivotally coupled to said third linking end of said second section for pivotal movement of said first and second section about a horizontal axis transverse to the conveyor axis;

said first linking end of each of said links being pivotally coupled to said fourth linking end of an adjacent link for pivotal movement about a vertical axis orthogonal to said conveyor axis and said horizontal axis;

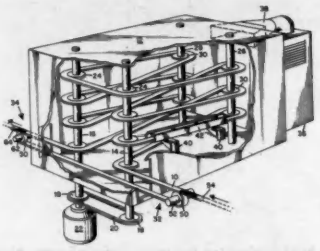
a spaced array of upstanding ribs on said links in meshed interdigitated relationship to provide an effectively continuous conveying surface;

a sprocket plate integral with each of said links disposed intermediate a pair of horizontal pivots and operative to mesh with a vertical sprocket;

a sprocket tooth integral with each of said links disposed intermediate a pair of vertical points and operative to mesh with a horizontal sprocket;

means for disposing said conveyor belt in a closed multiple loop path having a plurality of upwardly inclined courses, a plurality of downwardly inclined courses, a product supply section and a product removal section;

at least one vertically disposed drive shaft having a plurality



of drive sprockets rotatable in horizontal planes, each sprocket in driving engagement with the sprocket teeth of the links of a respective horizontally disposed loop of the conveyor belt;

means coupled to said at least one drive shaft to cause rotation thereof and of said drive sprockets;

at least one vertically disposed idler shaft having a plurality of idler sprockets rotatable in horizontal planes, each in engagement with the sprocket teeth of the links of a respective horizontally disposed loop of the conveyor belt;

the inclined courses of said conveyor belt extending between said at least one drive shaft and said at least one idler shaft; and

at least two vertical sprockets rotatable in vertical planes and each in engagement with the sprocket plates of the links of a respective vertically disposed loop of the conveyor belt.

4,184,589

DIMENSIONALLY STABLE SYNTHETIC CONVEYOR BELT

Fernand Habegger, Biel-Benken, Switzerland, assignor to Habasit AG, Reinach, Switzerland

Filed Apr. 21, 1978, Ser. No. 898,992

Claims priority, application Switzerland, Apr. 28, 1977, 5319/77

Int. Cl.[2] F16G *1/21, 1/08*

U.S. Cl. 198—847 13 Claims

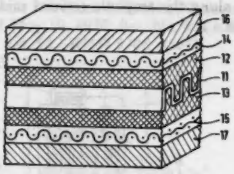
1. A dimensionally stable synthetic internal support conveyor belt which comprises:

(a) at least one homogeneous, flat tape composed of a molecularly orientated plastic with a modulus of elasticity of 15,000 to 25,000 kp/cm^2,

(b) said tape having a fixed profile on both of its large area surfaces,

(c) said profile including reinforcement ribs arranged with their components extending predominantly in the longitudinal direction of the tape, and

(d) binding layers composed of an elastic material with a modulus of elasticity of 800 to 1,000 kp/cm^2,



(e) said binding layers interlocking with the profile on both sides of the tape.

4,184,590

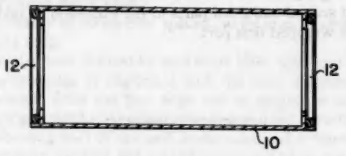
COIN HOLDER AND COUNTER

Arthur Tenbrink, Sr., P.O. Box 66, Wilton, Conn. 06897

Filed Feb. 17, 1977, Ser. No. 769,524

Int. Cl.^{2} A45C *11/28*

U.S. Cl. 206—0.82 **4 Claims**



1. A coin holder, comprising a walled tubular body of flexible, deformable sheet material, said wall defining an elongated longitudinally aligned aperture, rigid closure means disposed at opposite distal ends of said body, said distal ends of said body being open, said rigid closure means including a split annular ring, said ring having a predetermined internal diameter opening smaller then the internal diameter of said body, a pair of slits each communicating between one end of said aperture and one of said distal ends whereby pressure exerted against said distal ends deforms said walled body and enlarges said aperture.

4,184,591

METHOD FOR PRODUCING CIGARETTE PACKAGES AND PACKAGES PRODUCED BY THIS METHOD

Erwin H. Geldmacher, Tannenwaldallen 25, 638 Bad Homburg, Fed. Rep. of Germany

Continuation of Ser. No. 554,426, Mar. 3, 1975, abandoned, which is a continuation of Ser. No. 280,449, Aug. 14, 1972, abandoned, which is a division of Ser. No. 35,116, May 6, 1970, Pat. No. 3,732,663. This application Mar. 24, 1978, Ser. No. 889,742

Claims priority, application Fed. Rep. of Germany, May 8, 1969, 1923588; Aug. 7, 1969, 1940302; Aug. 7, 1969, 1940312; Aug. 7, 1969, 1940313

Int. Cl.^{2} B65D *85/10*

U.S. Cl. 206—265 **10 Claims**

1. A cigarette package (FIG. 6 formed from foldable elements comprising:

(a) a first foil web (9) having a substantially rectangular shape with a trapezoidal section at one end thereof (FIG. 4);

(b) said first foil web (9) having a first group of troughs formed therein distal said trapezoidal section;

(c) a second group of troughs formed in said first foil web (9) between said trapezoidal section and said first group of troughs;

(d) each said trough containing only one cigarette (61) therein;

(e) said troughs and cigarettes (61) having their major longitudinal axes disposed parallel to the major longitudinal axis of said substantially rectangular shape of said first foil web (9);

(f) a second foil web (30) covering said troughs and cigarettes (61) and being welded to said first foil web (9) to form individual sealed compartments each containing therein its own single cigarette (61);

(g) a first cut (17) across said first group of troughs in the end thereof distal said trapezoidal section;

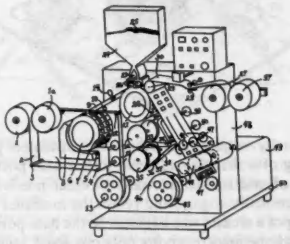
(h) a second cut (18) across said second group of troughs in the end thereof proximal said trapezoidal section;

(i) said first and second cuts (17, 18) being oblique to their associated troughs;

(j) a first opening thread (33) laid over said first cut (17);

(k) a second opening thread (34) laid over said second cut (18);

(l) a first covering foil strip (38) affixed over said first opening thread (33) and said first cut (17) closing said compartments of said first group of troughs;



(m) a second covering foil strip (37) affixed over said second opening thread (34) and said second cut (18) closing said compartments of said second group of troughs;

(n) each said closed compartment being air-tight to seal the cigarette therein in its own separate predetermined atmosphere until opened by its associated opening thread (33 or 34);

(o) two transverse fold lines (57) disposed between said first and second groups of troughs;

(p) a transverse fold line (58) disposed adjacent said end of said first group of troughs;

(g) two transverse fold lines (59) disposed between said trapezoidal section and said second group of troughs;

(r) the above mentioned elements being foldable about said fold lines (57,58,59) to form said package (FIG. 6) wherein said first and second groups of troughs overlie and contact each other in only a single common tangential straight plane intermediate said first and second groups of troughs; and

(s) a band (60) affixing said trapezoidal section to the exposed surface of said second foil web (30) to seal said package.

4,184,592

SPARK PLUG RETAINER

Jerry B. Howard, Jr., P.O. Box 11235, Fort Lauderdale, Fla. 33339

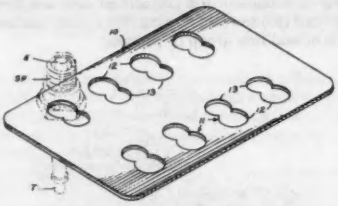
Continuation of Ser. No. 743,727, Nov. 22, 1976, abandoned. This application Feb. 24, 1978, Ser. No. 880,733

Int. Cl.^{2} B65D *85/20*

U.S. Cl. 206—327 **2 Claims**

1. The combination of a package and a removable retainer plate for storing and supporting a plurality of spark plugs of a selected size in a manner to prevent damage thereto as well as to maintain the spark plugs in an orderly relationship when the retainer plate is removed from the package, each of the spark

plugs including a tapered insulating portion having a terminal at one end and a base portion with an electrode at the opposite end, comprising package means including wall structure substantially surrounding at least the electrodes of a plurality of spark plugs, a retainer plate normally located within said package means and including a thin generally rectangular body of substantially rigid material having flat upper and lower surfaces, said retainer plate having a plurality of openings disposed in spaced generally parallel rows along the same, each of said openings of said retainer plate including a larger partially circular portion inter-connected to a smaller partially circular portion by a reduced waist, each of said partially circular portions extending substantially more than half the diameter of each portion, each of said partially circular portions including a peripheral wall extending entirely through said retainer plate, said wall of said larger partially circular portion being of a size



to frictionally engage and retain the insulated portion of a spark plug of a first size adjacent to the base portion thereof, said wall of said smaller partially circular portion being of a size to frictionally engage and retain the insulated portion of a spark plug of a second size adjacent to the base portion thereof, each of said openings receiving only one spark plug at a time so that a series of spark plugs of a selected size are frictionally retained within selected partially circular portions with their electrodes located on the same side of said retaining plate, and a removable wall member engageable with said package wall structure and said retainer plate, said wall member being of a size to space said electrodes from said package wall structure to protect the spark plugs during storage, whereby said retainer plate supports a plurality of spark plugs within said package means during storage and may be removed from said package means after which said spark plugs may be removed one at a time from said retainer plate for use.

4,184,593

PACKAGE FOR DISPOSABLE SYRINGES

Paul E. Dorr, Wunderlichstr. 3, D-8000 Munich 70, Fed. Rep. of Germany

Filed Jun. 23, 1977, Ser. No. 809,413

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629557

Int. Cl.[2] B65D *79/00*; **A61M** *5/18*

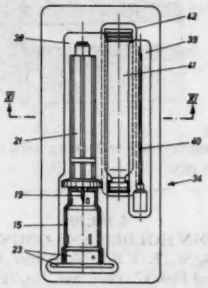
U.S. Cl. 206—365 **16 Claims**

1. A packaged disposable syringe arrangement comprising:

a first part comprising a sterilized filled cylindrical ampoule including a plug closing a rear end of the ampoule and serving as a piston for driving out the filling from the ampoule, a finger rest stop on the rear end of the ampoule, a piercable seal closing a front end of the ampoule, and a removable sealed wrapping means around said ampoule for maintaining the ampoule sterilized;

a second part separate from said first part and comprising a needle, a holder for the ampoule and for said needle whereby a partial length of said needle is inwardly held for piercing the seal closing the front end of the ampoule, the remaining length of said needle extending exteriorally of said holder, said holder being shorter than the ampoule, and a hollow needle cover covering remaining needle length and being shaped as a piston rod for connecting to the plug;

a third part including a separate finger rest having a sleeve slidable along the ampoule toward said rear end to said stop; and



packaging means for retaining said parts including retaining said wrapped first part separate from the other parts and having a gas permeable seal for permitting sterilization of said second and third parts to the exclusion of said sterilized wrapped first part.

4,184,594

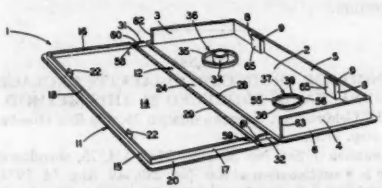
VIDEO CASSETTE STORAGE CONTAINER

Bruce A. Hehn, 110 Shepherd Ter., Clairsville, Ohio 43950

Filed Dec. 22, 1978, Ser. No. 972,386

Int. Cl.[2] B65D *85/67*

U.S. Cl. 206—387 **20 Claims**



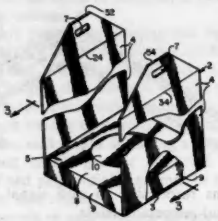
1. An improved box-like storage container construction of the type having spaced side, end, top and bottom walls forming a hollow enclosure for containing a cassette therein, in which first and second projection means are mounted on either the top or bottom walls and are spaced from each other a predetermined distance on said wall for projecting into a pair of spaced reel hub openings formed in a cassette for positioning and retaining the cassette in said container, wherein the improvement includes: the first projection means having an oval-shaped configuration with major and minor axes formed by first and second arcuate curved sections, with said first curved section being adapted to coincide with an outer arcuate curved section of a reel hub opening of a first size cassette, and with said second curved section being adapted to engage an inner arcuate curved section of a second size cassette for selectively retaining either of said first and second size cassettes in the storage container.

4,184,595

CARRYING DEVICE FOR POTTED PLANTS OR SIMILAR ARTICLES

Martha Wackerman, 119 Rices Mill Rd., Wyncote, Pa. 19095

Filed May 10, 1978, Ser. No. 904,428
Int. Cl.[2] B65D *5/46, 85/52*
U.S. Cl. 206—423 **4 Claims**



1. A carrying device adapted for planar arrangement during shipping and being capable after delivery of being folded to retain and transport an article comprising

an integral elongated carrying strip of foldable material defining a linear edge,

a plurality of transverse, spaced, score lines in said carrying strip,

a medial base defined by said score lines, said base having a first edge in alignment with the strip, a second edge spaced from the first edge and in alignment with the strip, a third edge joining the first and second edges and forming part of the said linear edge and a fourth edge joining the first and second edges and being parallel to the third edge,

a first rise section defined by the score lines, the first rise section extending integrally from the medial base first edge, a part of the first rise section forming a portion of the said linear edge,

a second rise section defined by the score lines and extending integrally from the medial base second edge, a part of the second rise section forming a portion of the said linear edge,

a first and second carrying strap defined by the score lines, the first and second carrying strap extending integrally from the first and second rise section, a part of the first and second carrying strap forming a part of the linear edge; and

a platform strip integral with the carrying strip and extending in length in a direction away from the linear edge,

a plurality of longitudinal and transverse score lines in the platform strip,

a retention member defined in the platform strip by longitudinal score lines in spaced relationship from the carrying strip, the retention member having a first transverse edge, a second transverse edge in spaced relationship to the first edge, a third longitudinal edge joining the first and second edges and a fourth longitudinal edge joining the first and second edges,

a first spacer leg integrally extending from the first transverse edge, a second spacer leg integrally extending from the second transverse edge, a third spacer leg extending from the third longitudinal edge and a fourth spacer leg integrally extending from the fourth longitudinal edge,

the height of the first, second, third and fourth spacer legs being equal to each other and to the height of the first and second rise sections of the carrying strip,

the platform strip being adapted to be folded about the score lines to position the retention member in registry over the medial base, the first, second, third and fourth spacer legs being adapted to be folded about a score line to contact the medial base and to support the retention member along its transverse and longitudinal edges in spaced relationship above the medial base,

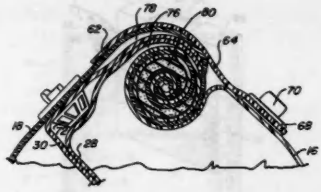
the retention member being provided with at least one opening whereby an article to be carried can be placed directly upon the medical base through the opening for vertical support and whereby the portions of the retention member defining the opening provide horizontal retention for the article.

4,184,596

CONTAINER FOR FRAGILE ARTICLES

John R. Avery, 523 Detroit St., Denver, Colo. 80206

Continuation-in-part of Ser. No. 780,714, Mar. 24, 1977. This application May 30, 1978, Ser. No. 910,228
Int. Cl.[2] B65D *85/30, 81/02*
U.S. Cl. 206—522 **6 Claims**



1. An inflatable container for holding articles, comprising:

a bag of flexible material having forward and rear walls closed at the bottom and at the side margins and open at the upper end;

the upper portions of the walls of the bag being formed to engage each other in facewise sealing relation and to be wrapped up into a spiral formation about an axis extending laterally of the bag to press the walls together tightly and maintain the sealing relation;

a first fastener means portion extending laterally across and secured to the exterior face of the upper portion of the forward wall well below the upper end of the bag;

a second fastener means portion extending laterally across and secured to the exterior face of the upper portion of the rear wall well below the upper end of the bag;

at least one fastener means portion being in the form of a vertically extensive elongate lateral strip secured only along one marginal edge to the bag and overlying the spiral formation;

cooperating connector means on the first and second fastener means portion to lock them together and maintain the spiral formation in wrapped condition;

at least one long narrow resiliently yieldable filler strip extending laterally across and secured to the upper portion of at least one wall of the bag above the line of attachment of the fastener means, said yieldable filler strip being wrapped with said upper portions of said walls as said upper portions of said walls are wrapped into the spiral seal formation, a space being formed thereby between one of said walls and the spiral formation so that the spiral formation is subjectable to pressurized air in said space to further tighten and secure the spiral seal;

and at least one valved air flow port in at least one wall of the bag for supplying air to inflate the bag, including said space.

4,184,597

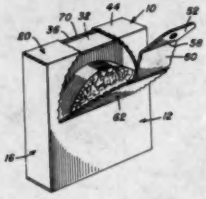
RECLOSABLE DISPENSING CARTON

Thomas W. Gavin, 3380 Merrick Rd., Seaford, N.Y. 11783

Filed Aug. 22, 1978, Ser. No. 935,775
Int. Cl.[2] B65D *17/20, 17/24*
U.S. Cl. 206—611 **7 Claims**

1. A reclosable carton comprising opposed front and rear

walls peripherally interconnected by opposed first and second side walls and opposed first and second end walls, the first end wall including an outer end panel and an underlying inner end panel, said outer end panel having a first edge integral with the front wall and a second edge generally aligned with the rear wall, a projecting panel extension integral with said second edge of the outer end panel, said panel extension comprising an elongated flange positionable outward of the rear wall, said flange having a central tearout section formed therein and constituting a tab, said outer end panel including a tearout section therein extending transversely across said outer end panel in alignment with said tab, said outer end panel tearout section being defined by a pair of spaced tear lines extending transversely across said outer end panel, said front wall including an access section therein, said access section extending from said outer end panel tearout section along at least a portion of the height of the front wall between the opposed end



walls, said access section being defined by a pair of spaced divergent tear lines forming continuations of the tear lines across the outer end panel and extending a distance across said front wall corresponding to the height of the access section, a hinge line interconnecting the lower ends of the access section tear lines, said tearout section and said access section being selectively severable from said first end wall and said front wall along said tear lines for a selective exposure of the underlying inner end panel and an opening of the access section to enable access to the interior of the carton, the inner end panel of said first end wall being integrally connected to said rear wall along a fold line at the juncture between the rear wall and the first end wall, and a tab receiving slot defined in the inner end panel of the first end wall parallel to and adjacent said fold line at the juncture between the rear wall and the first end wall, said slot being of a size so as to closely receive said tab for a reclosure of the access section subsequent to an initial opening thereof.

4,184,598

MANUALLY OPERATED POSITION DETECTOR FOR A CONVEYOR ARTICLE SORTER

Robert M. Cowlin, Chelmsford; Peter G. Long, Colchester; Leslie F. Sapsed, Coldnorton, and John F. Steward, Billericay, all of England, assignors to Lockwood Graders (UK) Limited, Chelmsford, England

Filed Oct. 11, 1977, Ser. No. 840,529

Claims priority, application United Kingdom, Oct. 8, 1976, 41940/76; Nov. 22, 1976, 48680/76

Int. Cl.[2] B07C *5/00*

U.S. Cl. 209—705 **17 Claims**

1. Article sorting apparatus comprising:

conveying means simultaneously conveying two or more articles to be sorted through an inspection area;

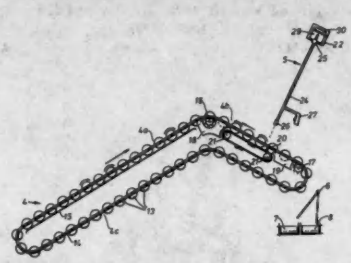
a reference frame in fixed spatial relationship to said area;

a rigid indicator member carried by said frame and movable with respect thereto;

emitter means for emitting a continual indicator stream selected from streams of energy and matter at a fixed angle to the indicator member and movable with said member to selectively impinge said stream on locations within the inspection area to indicate a transient position of an article in said area;

signal means responsive to the position of the indicator member relative to the reference frame for generating a position-dependent signal;

switch means for selectively actuating said signal means to generate a signal indicative of said transient position; and



deflector means responsive to said signal for selectively deflecting said indicated article.

4,184,599

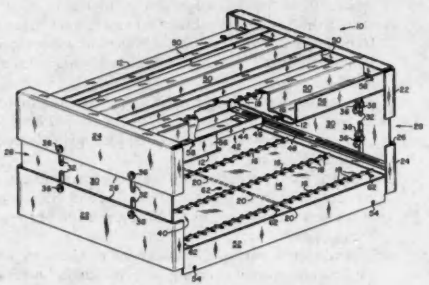
PRINTED CIRCUIT BOARD STORAGE DEVICE

Leo O. Drake, Ridge La., Mill Neck, N.Y. 11765, and Randall S. Drake, 85A Old Oak La., Levittown, N.Y. 11756

Continuation-in-part of Ser. No. 844,758, Nov. 17, 1977, abandoned. This application Jul. 12, 1978, Ser. No. 924,074

Int. Cl.[2] B65D *73/02*; H02B *1/04*

U.S. Cl. 211—41 **1 Claim**



1. In a storage cabinet for printed circuit cards,

top and bottom opposed substantially parallel support surfaces spaced apart a selected distance for releasably retaining a plurality of printed circuit cards disposed substantially normal therebetween,

a pair of opposed sidewalls depending from said top and bottom surfaces and connecting the same so as to define a tunnel-like enclosure having oppositely disposed open ends between said sidewalls and bounded by edges of said surfaces and sidewalls such that the printed circuit cards may be inserted into said enclosure through one of said open ends for assuming an upstanding stored position substantially normal between said open ends,

adjustable means on each of said sidewalls for selectively varying the distance between said top and bottom surfaces for the purpose of adjusting the same to the upstanding dimensions of printed circuit cards to be stored in said cabinet,

said top and bottom surfaces being substantially flat and having a plurality of elongated integrally defined upstanding ribs directed into the interior of said enclosure and positioned between and substantially parallel to the planes of said oppositely disposed open ends, each of said ribs including a plurality of grooves defined therein to interrupt the continuity thereof and being perpendicular to the direction of elongation of said ribs for receiving in said grooves edge portions of the printed circuit cards for the

purpose of retaining the cards in said upstanding stored position between said opposed top and bottom surfaces,

and adjustable stop means on at least one of said surfaces for selectively limiting the insertion of the printed circuit cards into said enclosure so as to prevent the overinsertion of the cards into the enclosure through said one open end and out of the enclosure through said opposite open end,

said plural grooves are of a predetermined width slightly larger than the thickness of the printed circuit cards to be stored in said cabinet,

auxiliary support means for guiding and retaining in said cabinet a plurality of printed circuit cards of a thickness greater than the width of said grooves, said auxiliary means being engageable on each of said top and bottom opposed surfaces and comprising a pair of substantially flat plates each having a plurality of upstanding elongated ridges thereon, said ridges including a plurality of slots of predetermined width greater than the width of said grooves defined substantially normal to the direction of elongation of said ridges,

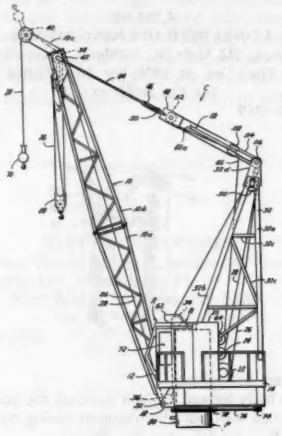
and engaging means on said opposed surfaces and on said flat plate auxiliary support means for connecting said flat plates with said opposed surfaces for supporting printed circuit cards of a different thickness between said flat plates than the printed circuit cards supported between said opposed surfaces.

4,184,600

METHOD FOR REMOVING A BEARING ASSEMBLY OF A PEDESTAL CRANE AND A REMOVABLE BEARING ASSEMBLY FOR A PEDESTAL CRANE

John B. Goss, 7627 Beach Cove La., and William D. Morrow, 10206 Amblewood, both of Houston, Tex. 77072

Filed Mar. 31, 1978, Ser. No. 892,018
Int. Cl.² B66C *23/84*
U.S. Cl. 212—70 **13 Claims**



1. For a pedestal crane assembly having a revolving turntable and a boom, the revolving turntable adapted to be movably disposed on a support column of a pedestal, a method for removing a thrust bearing assembly disposed between the revolving turntable and the pedestal, comprising the steps of:

centering the revolving turntable about the support column of the pedestal with alignment means mounted with the pedestal crane assembly, the alignment means being capable of radially engaging the pedestal for said centering;

activating a support means coacting with and between the revolving turntable and the upper end of the pedestal for raising and supporting the weight of the pedestal crane assembly from the support column of the pedestal;

removing a retainer plate that secures the thrust bearing assembly in position with respect to the revolving turntable and the upper end of the pedestal to permit removal and access to the thrust bearing assembly; and,

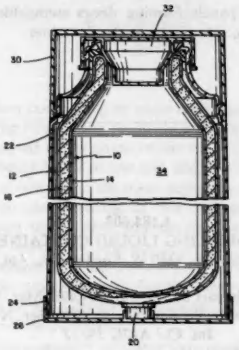
withdrawing the thrust bearing assembly from the pedestal to permit inspection thereof.

4,184,601

MICROWAVE SAFE VACUUM INSULATED CONTAINERS AND METHOD OF MANUFACTURE

Herbert M. Stewart, and William J. Tanner, both of Nashville, Tenn., assignors to Aladdin Industries, Incorporated, Chicago, Ill.

Filed Aug. 17, 1978, Ser. No. 934,475
Int. Cl.² A47J *41/02*
U.S. Cl. 215—13 R **12 Claims**



1. A vacuum insulated container construction including an infrared radiation barrier which is safe for use in microwave ovens comprising:

(a) a glass filler formed in the general shape of a container having inner and outer walls and defining an annular space between said walls, air being substantially evacuated from said annular space, said inner wall defining a thermal insulating container interior,

(b) an infrared barrier formed by an electrically nonconducting granular material which does not adsorb microwave energy provided in the annular space between said walls in an amount sufficient to substantially fill said space,

(c) means surrounding said filler, at least on the outer wall thereof, for protecting against damage to said filler.

4,184,602

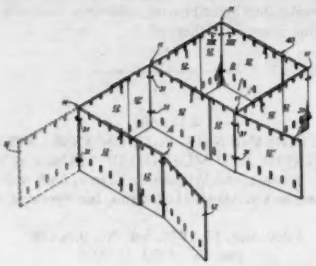
COLLAPSIBLE EXPANSIBLE CONTAINER

Henry Moliard, 942 Avenida Central, Guadalupe (S.J.), Costa Rica

Filed May 30, 1978, Ser. No. 910,683
Int. Cl.² B65D *7/00, 7/24*
U.S. Cl. 220—4 C **6 Claims**

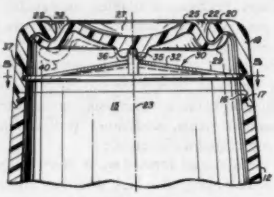
1. A container comprising a plurality of panel units each composed of a plurality of panels and hinges connecting one side of each panel in adjoining relation, said hinges acccommodating swinging of the panels from collapsed adjacent relation to extended positions radiating from the hinges, each of said panels having a plurality of rows of openings spaced along with widths thereof adapted to be aligned with openings in adjacent overlapped panels, fasteners seated in some of said openings holding the adjacent panels in desired overlapped condition, and said fasteners being easily removable from said

openings to accommodate shifting of the panels on all sides to contract or expand the volume of a chamber surrounded by the



panels and said panels forming doors swingable about said hinges to provide side access to the container.

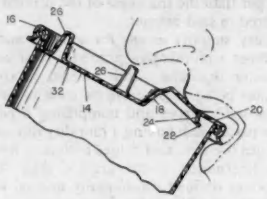
4,184,603
NON-SPILLING LIQUID CONTAINER
Calvin G. Hamilton, Sr., 1320 W. Cochise Dr., Apt. 1, Phoenix, Ariz. 85021
Continuation-in-part of Ser. No. 887,496, Mar. 17, 1978, abandoned. This application Nov. 6, 1978, Ser. No. 958,002
Int. Cl.[2] A47G *19/22*
U.S. Cl. 220—254 **8 Claims**



1. A non-spilling liquid container for temporarily containing consumable liquids comprising:
   a. a hollow container body having an opening for receiving and storing a liquid;
   b. said hollow container including a cap having an open top and an inwardly and downwardly extending lip surrounding the open top;
   c. a lid, positioned in the open top of said cap so as to be contacted by a consumer's lip when removing the liquid from said container, said lid including an annularly disposed, outwardly and upwardly extending lip; and
   d. spring means in contact with and supporting said lid with the lip on said lid opposed to and spaced from the lip on said cap to form a gap therebetween defining venting means, and forming a liquid seal therebetween when said liquid contacts said lid;

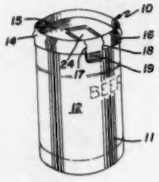
said cap, lid, and spring means in combination with said container defining anti-spilling drinking means whereby, consumable liquid in said container is prevented from escaping and whereby said liquid may be removed by a consumer by depressing said lid with his lip against the force of the liquid against said lid to break the liquid seal between the lip on said lid and the lip on said cap.

4,184,604
DRINKING LID
Christopher P. Amberg, Sylvania, Ohio, and Samuel L. Belcher, Clementon, N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Sep. 21, 1978, Ser. No. 944,664
Int. Cl.[2] A47G *19/22*
U.S. Cl. 220—254 **5 Claims**



4. A lid for a container, comprising:
   a generally circular body member;
   a platform integrally formed on said body member, said platform being bounded by the periphery of said body member and an upstanding wall portion which is generally defined by a chord of said body member, said wall portion connecting said platform to the remainder of said body member;
   sealing means integrally formed along the periphery of said body member;
   a flipper valve located on said platform, said flipper valve being generally radially aligned and hinged generally adjacent to said wall portion; and
   an integrally formed protrusion located on said flipper valve.

4,184,605
CONTAINER OPENING MEANS
Paul T. Hanson, 244 Main St., Millbury, Mass. 01527
Filed Oct. 20, 1978, Ser. No. 953,014
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—269 **5 Claims**



1. Container comprising:
   (a) a main body formed of sheet material, the body having a tubular side wall and a bottom wall closing one end of the side wall,
   (b) a top element formed of sheet material, the element having a top wall closing the end of the side wall opposite the bottom wall and having a skirt extending along the outer surface of the side wall, the skirt being provided with weakened first score lines defining a tear tab, the top wall being provided with weakened second score lines constituting extensions of the first score lines, so that application of force to the tab causes tearing along the first score lines followed by tearing along the second score lines to form an opening in said top wall, said top element having a transverse weakened bend line between the first and second score lines and a transverse weakened score line extending between the ends of the second score lines that are furthest from the first score lines, so that the

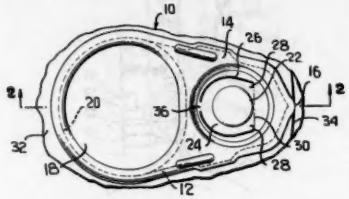
portion of the top element between said first and second score lines can be folded about said weakened bend line and bent about said transverse weakened score line under the general plane of the top wall to be completely free of said opening.

4,184,606

CHILD RESISTANT PULL TAB

Nick S. Khoury, Worth, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 954,007
Int. Cl.² B65D *41/32*
U.S. Cl. 220—270 6 Claims



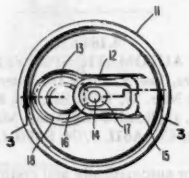
1. In a pull tab for easy opening containers wherein said tab includes a tab body having means at one end for applying an inwardly directed rupturing pressure on a container panel when the opposite end of said tab body is moved outwardly, and said tab body has a mounting ear formed from the central portion thereof by a generally C-shaped cut line and being connected to said tab body along a hinge line, the improvement comprising said pull tab having a child proof feature in the form of a selected portion of said cut line being interrupted to require a predetermined lifting force on said tab body other end to effect separation of said tab body from said mounting ear to permit hinging of said tab body relative to said mounting ear.

4,184,607

EASY OPEN CAN END

Vinson S. Potts, Cherry Hill, N.J., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Jan. 29, 1979, Ser. No. 7,186
Int. Cl.² B65D *41/32*
U.S. Cl. 220—273 9 Claims



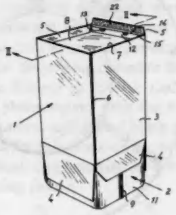
1. A can end comprising an end plate and a tab, said end plate being formed of aluminum and having formed therein a rivet to which the tab is attached, said tab being formed of steel and having a coating thereon of a metal preferentially corrodible with respect to the steel.

4,184,608

LINED CONTAINER, ESPECIALLY FOR COMPRESSED AND/OR EVACUATED GOODS

Od W. Christensson, Veddestavagen 7-9, S-175 62, Jarfalla, Sweden

Filed Jan. 23, 1978, Ser. No. 871,497
Claims priority, application Sweden, Jan. 26, 1977, 7700806; Mar. 15, 1977, 7702899
Int. Cl.² B65D *25/14*
U.S. Cl. 220—404 10 Claims



1. A container comprising an outer container of a stiff material and a lining of an easily formable material having a shape essentially adapted to the shape of the outer container,

said lining being closed at one end, and that closed end being exposed at one end of the outer container and being essentially even and openable at that end, said lining being constructed to be filled with product at the end of the container opposite to said one end,

the lining at said one end thereof being pressed down into itself in the central portion thereof to provide a projecting double layer rib extending all around its periphery at said one end of the container,

and said outer container including flaps at said one end of the container which are folded over against the inwardly facing surface of said rib to secure said rib and hence said lining to the outer container with said central portion comprising an even, openable end of the container spaced below the higher parts of the outer container at said one end of the container.

4,184,609

CRYOGENIC CONTAINER COMPOUND SUSPENSION STRAP

John W. Vorreiter, Sunnyvale, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 22, 1978, Ser. No. 935,827
Int. Cl.² B65D *25/18*
U.S. Cl. 220—445 3 Claims

1. A cryogenic container comprising:

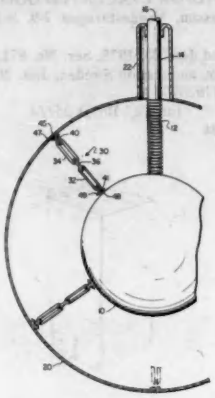
an outer shell;

an inner shell adapted to hold a liquid gas and positioned within said outer shell; and

means for suspending said inner shell from said outer shell;

said means for suspending said inner shell including a compound strap comprising at least two unidirectional fiberglass epoxy links of different thicknesses, a first link of said

strap having a predetermined thickness and being positioned adjacent said inner surface of said outer shell and a second link of a lesser thickness being positioned adjacent said inner shell.

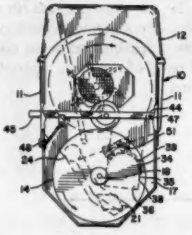


4,184,610

SEED CUT-OFF ADJUSTMENT FOR A PLANTER DISPENSER

Werner H. Thiele, Darien, and Vedick A. Erickson, Naperville, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 8, 1979, Ser. No. 1,812
Int. Cl.² B65H *3/08*
U.S. Cl. 221—278 **6 Claims**



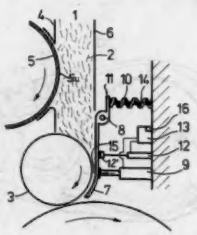
1. In a seed dispenser for a planter of the type comprising a stationary wall, a seed selector drum rotatably mounted on said wall and having peripheral openings therein, means for rotating said drum, means for supplying seeds to said drum, means for delivering air under pressure to the interior of said drum to attract and hold seeds to said openings by a pressure differential between the interior and the exterior of said drum and to carry the seed to a discharge area after a predetermined rotation of said drum, and seed cut-off means resiliently mounted in said drum from said stationary wall and in the path of the seed carried by said drum and in advance of said discharge area so that when a plurality of seeds are attracted to an opening causing one or more seeds to protrude further from said seed selector drum than would a single seed, the excess are engaged and removed from said seed selector drum, said seed cut-off means including gauge means engageable with the inner periphery of said drum wherein the improvement comprises: said gauge means further comprising a bracket, a roller rotatably mounted on said bracket and engaging said drum inner periphery, said bracket being pivotally supported by said seed cut off means and means for varying and fixing the position of said seed cut off means relative to said gauge means for varying sizes of seeds.

4,184,611

METHOD OF AUTOMATICALLY TAKING IN A FIBRE LAYER IN BLOW-ROOM MACHINES AND APPARATUS FOR IMPLEMENTING THE METHOD

Rolf Binder, Räterschen, and Paul Stäheli, Wilen b. Wil, both of Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Jul. 10, 1978, Ser. No. 922,814
Claims priority, application Switzerland, Jul. 18, 1977, 8848/77
Int. Cl.² B67D *5/08*
U.S. Cl. 222—1 **6 Claims**



1. A method of taking-in a fibre layer in blow-room machines, comprising the steps of:
providing a number of pivotable pedal levers distributed across the width of the machine and loaded by a pressing device;
providing a take-in roll;
pressing the fibre layer by means of said number of pivotable pedal levers against the take-in roll; and
temporarily lifting-off the pedal levers from the take-in roll in response to the absence of fibre material between the take-in roll and the pedal levers.

4. An apparatus for taking-in a fibre layer in a blow-room machine, comprising:
a fibre supply duct;
a take-in roll positioned to cooperate with said fibre supply duct;
a number of pedal levers arranged across the width of the take-in roll;
a pressing device for pressing the pedal levers towards the take-in roll;
feeler means cooperating with said pedal lever;
control means cooperating with said pressing device;
said feeler means detecting an end position of said pedal levers in the absence of fibre material and activating said control means in order to deactivate the pressing device of said pedal levers.

4,184,612

AUTOMATIC SPRAYER

Leopoldo E. Freyre, Jose A. Terry 370, Buenos Aires, Argentina

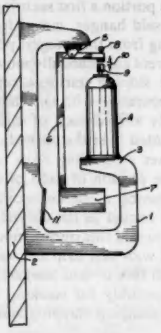
Filed Mar. 27, 1978, Ser. No. 890,284
Claims priority, application Argentina, Mar. 30, 1977, 267031
Int. Cl.² A61L *9/04*; B05B *15/00*
U.S. Cl. 222—70 **10 Claims**

1. Apparatus for automatically and controllably emitting an aromatic substance into the surrounding environment from a container containing the substance and having an actuator for emitting the substance comprising:
a support for attachment to a movable member,
an arm pivotally carried by said support for movement about a generally horizontal axis,
a stop carried by said arm on one side of its pivotal axis and

located opposite the actuator of the container containing the substance,

means for mounting said container on said support,

a mass carried by said arm on the other side of said pivotal axis and responsive to movement of the member to which the support is attached to pivot said arm from a first, inoperative position to a second operative position that causes said stop to actuate the actuator and emit aromatic substance into the surrounding environment,



means carried by said support including an electrical circuit for retaining said arm in said second position to enable continuous actuation of the actuator and emission of the aromatic substance into the surrounding environment over a predetermined period of time and for permitting said arm to return to said first position after said predetermined period of time.

4,184,613

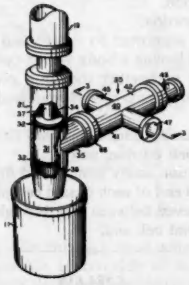
APPARATUS FOR COMBINING A PLURALITY OF VISCOUS STREAMS TO FORM A PATTERNED PRODUCT

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 537,463, Dec. 30, 1974, Pat. No. 3,991,217. This application Aug. 31, 1976, Ser. No. 719,222

Int. Cl.² B67D *5/60*

U.S. Cl. 222—145 **15 Claims**



1. Apparatus comprising:

a plurality of product supply conduit means for supplying a plurality of product streams of similar viscosity and temperature;

a product patterning means having an outlet and a plurality of inlet means, each said inlet means being connected to a respective one of said plurality of supply conduit means, said product patterning means comprising a tubular patterning chamber which is subdivided into a plurality of tubular pattern conduits, each said pattern conduit being connected to a respective one of said plurality of inlet means, said product patterning means being for accepting the product stream from each of said supply conduit means and for delivering a patterned product stream having a generally uniform cross-sectional pattern from the outlet thereof; and

a dispensing valve means for accepting said patterned product stream and delivering separated segments of said patterned product stream from a delivery outlet thereof, each said separated segment delivered therefrom maintaining substantially the same cross-sectional pattern as said patterned product stream; said dispensing valve means comprising a tubular dispensing chamber having an inlet opening in the side thereof to receive said patterned product stream, and a piston mated with the walls of said tubular dispensing chamber, said piston being movable within said dispensing chamber to alternately cover said opening and to establish fluid communication between said opening and said delivery outlet.

4,184,614

DOUGH DISTRIBUTION MACHINE

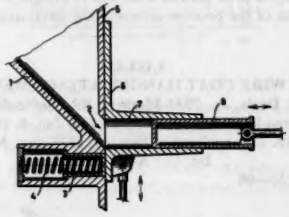
Antonius Hurkmans, 71 Prof. Buyslaan, 3741 DB Baarn, Netherlands

Filed Oct. 16, 1978, Ser. No. 951,867

Claims priority, application Netherlands, Oct. 21, 1977, 7711612

Int. Cl.² A21C *5/02*

U.S. Cl. 222—190 **5 Claims**



1. A machine for the distribution of dough or similar viscos material, comprising a hopper with an outlet, a distribution head with at least one pressure chamber and a dough expeller movable therein, the said distribution head reciprocating in a sealing manner along the end face of the outlet of the hopper, the pressure chamber in a first position of said head being in open connection with the outlet of the hopper in order to receive an amount of dough from the stock through the withdrawal of the dough expeller, said expeller being able to eject at least part of the received dough amount in another position of the distribution head, at least one storage chamber with a piston under pressure being provided, which chamber in a second position of the distribution head cooperates with the pressure chamber for receiving under pressure a portion of the amount of dough stored in the pressure chamber, so as to define accurately the desired portion of dough, this portion being expelled in another position of the distribution head.

4,184,615

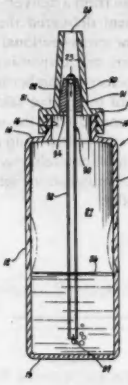
FOAM DISPENSING DEVICE

Hershel E. Wright, P.O. Box 51, Decatur, Ill. 62525

Continuation-in-part of Ser. No. 656,347, Feb. 9, 1976, Pat. No. 4,018,364, which is a continuation-in-part of Ser. No. 564,700, Apr. 3, 1975, Pat. No. 4,022,351, and Ser. No. 564,701, Apr. 3, 1975, Pat. No. 3,937,364. This application Apr. 11, 1977, Ser. No. 786,087

Int. Cl.[2] B65D *37/00*

U.S. Cl. 222—190 **7 Claims**



1. A foam dispensing device comprising:

(a) a flexible container for holding a foamable liquid and air having a discharge port,

(b) foam producing means separating the area adjacent said discharge port and the interior of the container including:

(1) passage means from the interior of the container leading to the discharge port, said passage means having a cross sectional area smaller than the container,

(2) at least one porous member mounted in the passage means, the porous member having a foam discharging surface area greater than the minimum cross-sectional area of the passage means at the mounting location.

4,184,616

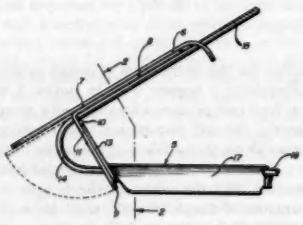
WIRE COAT HANGER ATTACHMENT

George B. Davis, Jr., 7512 Marbury Rd., Bethesda, Md. 20034

Continuation-in-part of Ser. No. 756,684, Jan. 4, 1977, Pat. No. 4,066,193. This application Dec. 30, 1977, Ser. No. 865,941

Int. Cl.[2] A47J *51/086*

U.S. Cl. 223—98 **8 Claims**



1. A garment supporting attachment for attaching to a conventional bent wire coat hanger having sloping garment shoulder supporting surfaces connected by curved end portions to a horizontal cross-member said supporting attachment comprising, two shoulder supporting portions each respectively, including a first plate having first and second end with said first end for mounting over and extending beyond the curved end portion of the hanger, means forming a second plate secured to and forming an integral part of said first plate and including a free portion having therein a transverse crease line inwardly of said first end and a portion manually engagable to facilitate the bending of said free portion from said first plate at said crease-line, means forming an elongated slit extending through said free portion for receiving therein the curved end of said hanger with the sides of said slit being operative to frictionally grip the sides of said hanger as the curved end portion of the hanger is forcefully inserted to seated position within said slit to form by said slitted free portion a first securing means for fastening said attachment to said hanger, means forming a second securing means extending from the integral portion of said first plate at second end thereof and manually movable into locking engagement with the sloping garment supporting surface of said hanger and cooperative with said first securing means to maintain respectively affixed each of said shoulder supporting attachments mounted over the curved outer end portions of said hanger, a trouser supporting strip respectively affixed at its ends to the free portion of each of said shoulder supporting members and having a portion movable over the wire cross member of said hanger as the curved hanger ends are respectively received in said slits during mounting of said attachment to a hanger and with said strip and said first and second securing means, when free of said hanger, being movable to a substantially flat assembly for stacking one upon the other for advantageous packaging shipping and handling.

4,184,617

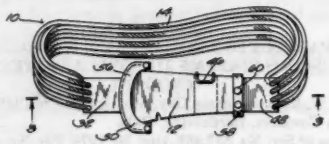
SURVIVAL BELT

Edwin Lyon, 944 Buttermilk Creek Dr., Fond du Lac, Wis. 54935

Filed Jul. 7, 1978, Ser. No. 922,554

Int. Cl.[2] A45C *1/04*

U.S. Cl. 224—151 **14 Claims**



1. A survival belt to be worn about the waist including in combination

a first belt portion,

a second belt portion,

a hatchet head supported by one of said belt portions, said hatchet head having a body with a cutting edge and said body having a chamber therein a plurality of survival implements supported by and contained within said chamber,

means for releasably connecting said first belt portion and said second belt portion, and

a third belt portion solely joining said first and second belt portions at an end of each of said belt portions and including a rope reeved between and through said first belt end and said second belt end.

4,184,618

ARTICLE CARRYING ATTACHMENT FOR WALKERS

Marjorie F. Jones, Box 519, Casa Grande, Ariz. 85222

Filed May 26, 1977, Ser. No. 800,636

Int. Cl.[2] B60R *11/00*

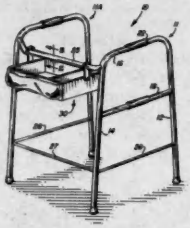
U.S. Cl. 224—42.46 R **5 Claims**

1. A caddy for a mobil walker of the type having a frame including at least one generally horizontal frame member supported on one or more generally vertical depending legs, said caddy comprising:

(a) a generally rigid receptacle having a bottom and upstand-

ing sidewalls, and front and rear walls, said bottom defining a first generally circular recess having a diameter adapted to support and retain a plate, said bottom further defining a second generally circular depression being of a size and dimension to receive a drinking utensil; and

(b) attachment means at each of said sidewalls for securing said receptacle to said horizontal frame member, said attachment means each having a hook defining an opening securable about said horizontal frame member, said attachment means including an arm, each arm having an aperture therein, and



(c) said opposite sidewalls each being provided with a plurality of spaced-apart projection means selectively engageable with said apertures in said attachment means whereby said attachment means can be detachably secured at a plurality of transverse locations at said sidewalls to retain said caddy in a stable, generally horizontal position so the attachment means can be adjusted to accomodate various loads and walker geometry.

4,184,619

CUTTING DEVICE

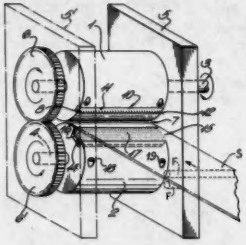
David B. Stewart, Angus, Scotland, and Edward G. Preston, Deptford, England, assignors to Wm. R. Stewart & Sons (Hacklemakers) Limited, Dundee, Scotland

Filed Dec. 19, 1977, Ser. No. 862,095

Claims priority, application United Kingdom, Dec. 22, 1976, 53516/76

Int. Cl.[2] B26F *3/02, 1/24*

U.S. Cl. 225—94 **19 Claims**



1. A cutting device for cutting a sheet material web of indeterminate length generally transversely of its length comprising a pair of members defining therebetween a gap through which a sheet material web of indeterminate length is adapted to pass, means for imparting opposite relative rotational motion to said pair of members for progressively decreasing the size of said gap during the passage of the web therebetween and impart a predetermined linear speed to said web as the latter departs said gap, means for feeding a sheet material web of indeterminate length to said gap, a first of said pair of members carrying narrow linear cutting means disposed transversely of the length of the web and projecting toward a second of said pair of members during the decreasing in size of said gap for cutting completely through the web transversely thereof to form only a generally narrow cut line thereacross, said narrow linear cutting means being a plurality of first pins whereby the narrow cut line is a line of perforations, said second member carrying a plurality of closely spaced at least partially circumferentially extending second pins disposed transversely of the length of the web and projecting toward said first member during the decreasing in size of said gap for receiving therebetween said linear cutting first pins and supportingly backing-up the web during the transverse cutting thereof whereby the web can be separated into discrete lengths along the narrow cut line, and said feeding means feed said web to said gap at a linear speed with is slower than said predetermined speed whereby the combined movement of said first and second pins exert a pulling action on said web during the perforation thereof to facilitate the separation of said web along said line of perforations.

4,184,620

SPRING POWERED STAPLER

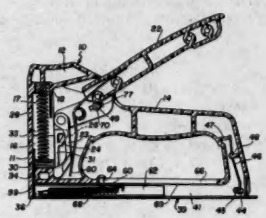
John Ewig, Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Division of Ser. No. 820,442, Aug. 1, 1977, Pat. No. 4,119,258.

This application May 19, 1978, Ser. No. 907,592

Int. Cl.[2] B25C *5/10*

U.S. Cl. 227—8 **2 Claims**



1. A stapler, comprising:

(a) a frame having two spaced, parallel side walls, each in the shape of a closed plane figure formed of a high-density polymer having an integral peripheral web, the webs engaging at a central plane midway between the side walls, said frame having a bore with a notch in the surface which defines the bore,

(b) a hammer slidable between the side walls,

(c) a spring residing between the side walls and engaging the hammer at one end, each side wall having an inwardly-directed flange, the side walls and the flanges forming a cavity enclosing the other end of the spring,

(d) an actuating lever provided with a bore and a notch in the wall which defines the lever bore,

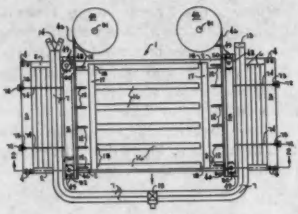
(e) a pin extending through the bores in the frame and lever to permit hinged movement of the lever, said pin having a protuberance, said pin being slidable in said bores transversely of the frame from a release position where the protuberance is outside of the notch in the lever bore, to a locking position in which the protuberance engages the notches in the frame bore and the notch in the lever bore, and

(f) a lifter connected to the lever for lifting the hammer against the pressure of the spring and for releasing said hammer to drive a staple when the pin is in the release position.

4,184,621
BUILDING PRESS

Archie C. Epes, 1705 Audubon Pl., Shreveport, La. 71105

Continuation-in-part of Ser. No. 687,022, May 17, 1976, Pat. No. 4,081,120. This application Mar. 24, 1978, Ser. No. 889,831
Int. Cl.[2] B27F 7/02
U.S. Cl. 227—26 18 Claims

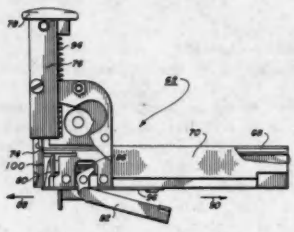


1. A building press comprising:
(a) A frame shaped to receive building components in a selected configuration;
(b) A pair of oppositely disposed, continuous hammers coextensive with said frame and movably carried by said frame;
(c) Band means positioned in substantially parallel relationship between said hammers and said building components;
(d) A plurality of fasteners carried by said band means and having sharpened tips adjacent to said building components; and
(e) Pressure means in cooperation with said frame and said hammers to move said hammers with respect to said frame and force said fasteners into said building components.

4,184,622
STAPLER HEAD

Charles W. Spehrley, Jr., Hanover, N.H., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 7, 1978, Ser. No. 922,609
Int. Cl.[2] B27F 7/06
U.S. Cl. 227—119 6 Claims

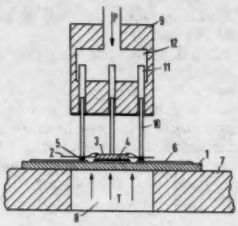


1. A stapling apparatus, including:
means for driving a staple into an article, said driving means comprises a pair of planar members, each of said planar members having therein a slot with a channel substantially normal to and in communication therewith, a magazine interposed between and having said pair of planar members secured thereto with opposed slots therein being substantially aligned with one another to define a drive track and opposed channels therein being substantially aligned with one another to define a staple passageway, said magazine supporting movably a stick of staples so that successive lead staples advance through the staple passageway into the drive track, and a plunger mounted slidably in the drive track for reciprocating movement with movement in a first direction being adapted to drive a staple into the article and movement in a second direction opposed thereto being adapted to return said plunger to the initial position thereof;
means for supporting laterally the staple being driven into the article to prevent tilting of the staple, said supporting means comprises a shoe arranged to move slidably in a direction substantially normal to the direction of movement of said plunger, and means for urging resiliently said shoe toward the drive track so as to provide lateral support for a staple moving therethrough; and
means for retracting the shoe of said supporting means to facilitate removal of a jammed staple.

4,184,623
PROCESS FOR BONDING CIRCUIT MODULES ONTO A THIN-FILM CIRCUIT

Burkhard Strasser, Liechtensteinerstrasse 13, 6800 Feldkirch, Austria (4)

Filed Sep. 8, 1977, Ser. No. 831,424
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1976, 2640613
Int. Cl.[2] B29K 31/02
U.S. Cl. 228—180 A 1 Claim



1. A method of bonding a flexible substrate having a circuit element disposed thereon and connected to conductive strips, with conductive strips of a film circuit disposed on a ceramic substrate, one side of said flexible substrate having soldered conductive strips as well as solder blisters, characterized in providing said ceramic substrate (1) with an adhesive agent (4) at the site where said circuit element (3) disposed on said flexible substrate (2) is to be inserted, inserting said circuit element (3) located on said substrate (2) into said film circuit and adjusting it at the site provided with said adhesive agent, then curing said adhesive agent and selectively heating said film circuit for a short time at least in the area of said solder blisters, while exerting bonding forces on said flexible substrate by a plurality of pins (10) of a hold down clamp (9) having a pressure chamber operable to force the pins against the substrate, the solder blisters of said substrate (2) thereby being bonded electrically with the conductive strips (6) of said ceramic substrate under the influence of the force exerted on said flexible substrate (2) by said pins, said heating step being carried out by one of infrared radiation and a gas flame directed upon the reverse side of said ceramic substrate through a hole in a support for said reverse side.

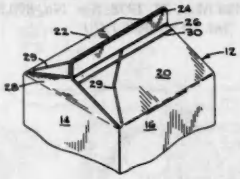
4,184,624
FLATTENABLE TOP FOR GABLE TOP CONTAINERS

Perry W. MaGill, Moraga, Calif., assignor to Ampco Foods Inc., San Francisco, Calif.

Division of Ser. No. 531,380, Dec. 10, 1974. This application Feb. 17, 1976, Ser. No. 658,734
Int. Cl.[2] B65D 5/74
U.S. Cl. 229—17 G 3 Claims

1. A blank for a gable top carton of the type that has first and second substantially identical upward converging slanting gable panels at the upper region of which are respective upper score lines for affording sealing of the carton top to form a rib and wherein said gable panels have a slant length A and the

carton top has a span B which is less than twice A, the improvement comprising said first gable panel defining an auxiliary score line parallel with and below said upper score line so



that said first gable panel can be concavely folded at said auxiliary score line to flatten said gable top without substantially distorting said second panel.

4,184,625

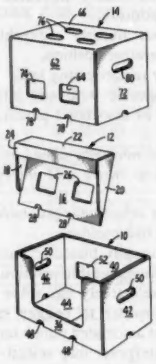
CONTAINER FOR FRESH PRODUCTS SUCH AS ASPARAGUS

Ray H. Stollberg, Gilroy; Wendell J. Johnson, Manteca, and Richard O. Welch, Modesto, all of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Dec. 28, 1978, Ser. No. 974,201

Int. Cl.[2] B65D *77/26, 85/30*

U.S. Cl. 229—23 BT **6 Claims**



1. A container for fresh products such as asparagus comprising the combination of:

an open top box body having interconnecting front, bottom, back and end walls, said bottom, back and end walls all having a substantially rectangular configuration, and said front wall having a generally U-shaped configuration to define a display aperture therein;

a separate removable insert positionable in said box body, and defining therewith an interior of trapezoidal-shaped cross section for accommodating said fresh products, said insert being a die cut pad having a main panel and generally triangular-shaped side panels connected to said insert main panel at the ends thereof, said insert main panel adapted to extend between the box body end walls and between the fresh products therein and the display aperture when said insert is positioned within said box body with said insert panels being in face-to-face engagement with said body end walls, said insert additionally comprising an insert top panel connected to the top of said insert main panel and angularly disposed relative thereto when said insert is positioned in said box body to define a horizontally disposed ledge extending between the insert main panel and said box body front wall and a lip panel depending from said insert top panel adapted to be disposed in face-to-face relationship with the box body front wall, when said insert is positioned in said box body, and

a separate removable cover for placement over said box body and said insert.

4,184,626

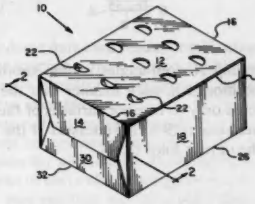
WRAP-AROUND BEVERAGE CARRIER WITH TOTAL SEPARATION

Earl J. Graser, and Earl J. Killy, both of Monroe, La., assignors to Olinkraft, Inc., Denver, Colo.

Filed Nov. 13, 1978, Ser. No. 959,531

Int. Cl.[2] B65D *5/02, 5/48, 65/24*

U.S. Cl. 229—40 **12 Claims**



1. A one-piece wrap-around beverage container carrier comprising:

(a) an exterior top panel;

(b) a first side panel hingedly attached to the top panel;

(c) a bottom panel hingedly attached to the first side panel;

(d) a second side panel hingedly attached to the bottom panel;

(e) a partial interior top panel hingedly attached to the second side panel, the partial interior top panel also being fixedly attached to the exterior top panel;

(f) a plurality of interior partition panels hingedly attached to the partial interior top panel and fixedly attached to the bottom panel;

(g) the exterior top panel, the bottom panel, and the partial interior top panel having formed thereon a plurality of inwardly turned tabs positioned within the inside of the carrier in such a manner that the plurality of tabs in combination with the plurality of interior partition panels serve to provide full protection between adjacent containers to the beverage containers positioned within the carrier; and

(h) a pair of side panels hingedly attached to the top panel and the bottom panel for enclosing the ends of the carrier whenever the carrier is set up with the beverage containers positioned within the carrier.

4,184,627

SACK OF PLASTICS MATERIAL WITH INTERNAL FASTENER AND BASE COVERING SHEET AND METHOD OF MAKING SAME

Fritz Achelpohl, and Richard Feldkämper, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Oct. 13, 1977, Ser. No. 841,757

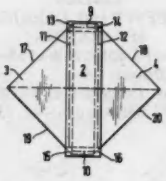
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1976, 2647432

Int. Cl.[2] B65D *33/16*

U.S. Cl. 229—60 **6 Claims**

1. A plastic sack which is made from a tube section and of which the base comprises side flaps defined by corner folds formed by pulling an end of the tube section open, an internal fastener which partially covers the corner folds, and a base covering sheet adhered over side flaps of the base that are folded after the internal fastener is applied, characterized in that in a sack made from a woven tube section of plastics threads or tapes and coated on the outside or laminated on the outside with a plastics film, the internal fastener (2) projects

beyond a square base defined by the corner folds in a region between the corner folds (3, 4), is turned over onto the outer sides (7, 8) of the wall of the tube section and is connected to the corner folds (3, 4), and the outer sides (7, 8) by weld seams



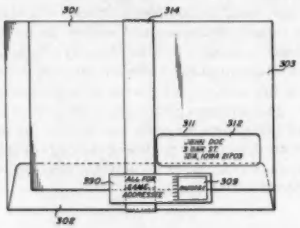
(9 to 12) extending at right-angles to one another, the weld seams being positioned in such manner that the internal fastener is connected only to exterior surfaces of the tube section and that the weld seams (9 to 12) intersect at the folded edges (17 to 20) of the corner folds (3, 4).

4,184,628

MAILING ASSEMBLY

Frank L. Schultz, P.O. Box 517, Alamo, Tex. 78516

Continuation-in-part of Ser. No. 659,034, Feb. 18, 1976, abandoned. This application Dec. 13, 1977, Ser. No. 860,075
Int. Cl.[2] B65D *27/00*
U.S. Cl. 229—68 R **12 Claims**



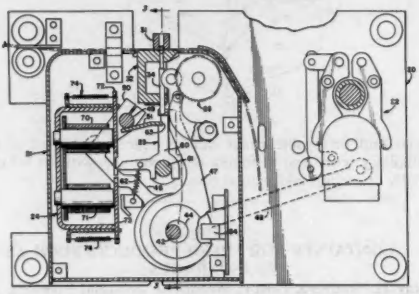
1. A mailing assembly for use in the postal system of the United States of America in a class of mail wherein postage costs increase in steps related to increasing predetermined weights of matter mailed, and wherein one of said predetermined weights is represented by X, comprising: a plurality of initially independent mailable items of said class whose combined weight is represented by A; means having a weight which when added to A equals X or less associating said items together so that each of said items is at least partially exposed to view and so that said items plus said means form a unitary mailing piece; said mailing assembly including visible delivery address information, whereby said mailing assembly may be provided with the required postage for weight X and then deposited in and transported through the mails and delivered to said delivery address as a single entity, said means comprising a strip having opposite ends, surrounding all of said items and a sticker having an adhesive side adhered to each of said opposite ends and forming said strip into an endless band, said sticker also being adhered to at least two of said items.

4,184,629

PAPER TAPE PUNCH AND READER

Jacob H. Drillick, Glen Rock, N.J., assignor to Drillick-LaManna Corporation, Saddle Brook, N.J.

Division of Ser. No. 774,529, Mar. 4, 1977, Pat. No. 4,126,257.
This application Mar. 27, 1978, Ser. No. 890,535
Int. Cl.[2] G06K *1/10*
U.S. Cl. 234—115 **1 Claim**



1. A paper tape punching mechanism for punching multiple holes comprising:

(a) a set of punches and dies,

(b) a set of interposers, one associated with each punch,

(c) each interposer linearly moveable to move said punch into operative position,

(d) each interposer linearly moveable to withdraw said punch from operative position,

(e) a continuously reciprocating bail,

(f) said bail engageable with said interposer to force the interposer, and its associated punch, into the withdrawn position,

(g) said interposer normally biased to engage said bail to allow said bail to move said interposer into operative position,

(h) said interposer selectively pivotable to disengage from said bail as said bail oscillates,

(i) an armature normally biased to cause said interposer to pivot into the disengageable position,

(j) said armature selectively moveable to a position which allows said interposer to engage said bail forcing the interposer and its associated punch into operative position, whereby said interposer may selectively engage said bail and operate said punch.

4,184,630

VERIFYING CIRCUIT OPERATION

Donald R. Woodward, Northglenn, and John W. Marshall, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

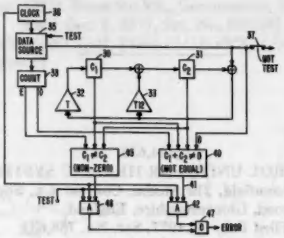
Filed Jun. 19, 1978, Ser. No. 916,659
Int. Cl.[2] G06F *11/00*
U.S. Cl. 235—302.4 **7 Claims**

1. The method of testing logic apparatus embodying a polynomial equation as a design base, the steps of:

repeatedly supplying a given set of test bits to said apparatus,

upon predetermined ones of said repeated supply of test bits, extract the signal contents from said apparatus,

if such one repeated supply is an even numbered repetition, check said extracted signals for a sum of zero,



if such one repeated supply is an odd numbered repetition, check said extracted signals for an equality with said test bits, and

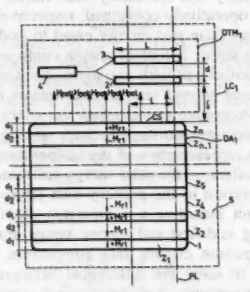
signal an error condition upon a failure of said check.

4,184,631

DEVICE FOR READING INFORMATION MAGNETICALLY CODED ON A CARRIER

Jean-Pierre Lazzari, Montfort l'Amaury, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull, Paris, France

Filed Apr. 24, 1978, Ser. No. 899,217
Claims priority, application France, May 13, 1977, 77 14661
Int. Cl.[2] G06K *7/08;* G11B *5/12, 5/20*
U.S. Cl. 235—449 **17 Claims**



1. A device for reading information magnetically coded on a carrier having precoded information and adapted to be passed successively in front of a magnetizing device for magnetizing the information and a magnetic transducer device for detecting the magnetized information, comprising:

a magnetizing device having at least one magnetic layer said magnetic layer containing a succession of adjoining zones of lengths d_1 and d_2, the length d_2 being much greater than d_1 and the magnetic inductions in the zones being of opposite sense;

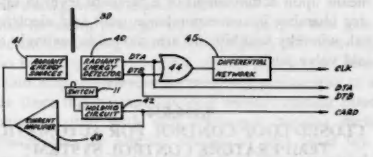
a magnetic transducer device having at least one magneto-resistive member for detecting the information and a magneto-resistive compensating member, said compensating member being disposed close to the magneto-resistive detecting member at a distance such that it is subject to the same interference fields as the detecting member while not being subject to the magnetic leakage field of the magnetized information as it passes in front of the transducer, and the voltages developed across the detecting and compensating members in response to the effect of the interference fields being substantially equal.

4,184,632

DATA CARD AND DATA CARD READER COMBINATION

Mark W. Moss, P.O. Box 17024, Irvine, Calif. 92713

Filed Jul. 28, 1978, Ser. No. 928,803
Int. Cl.[2] G06K *7/14, 19/06;* G08C *9/06*
U.S. Cl. 235—458 **7 Claims**



1. A data card and data card reader combination comprising:

a. a data card incorporating two data tracks, said data tracks surrounding a plurality of perforations spatially arranged to represent encoded data;

b. at least one radiant energy source;

c. two radiant energy detectors;

d. guide means for guiding the movement of said data card with respect to said radiant energy detectors whereby said detectors may produce two data pulse trains corresponding to the perforations of said data tracks; and

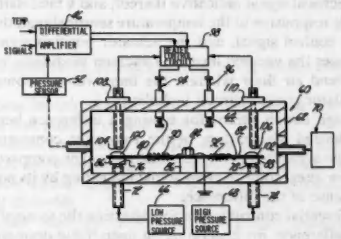
e. selector means for assigning a first binary code value to the data pulse train exhibiting the first appearing pulse and a second binary code value to the data pulse train not exhibiting the first appearing pulse.

4,184,633

BIMETAL CONTROLLED ACTUATOR

George T. Bata, Grafgon; Van P. Spiker, Newport News, and Patrick D. Harper, Seaford, all of Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 15, 1977, Ser. No. 833,407
Int. Cl.[2] G05D *15/00, 23/00*
U.S. Cl. 236—68 R **16 Claims**



1. A pressure transducer for producing a variable fluid pressure level from at least one pressure source corresponding to the level of a varying electrical signal input, the pressure transducer comprising:

an enclosure having an interior chamber;

means creating a controllable communication with said interior chamber including:

a valve port and at least one heated bimetal actuator operatively associated with said valve port, said heated bimetal actuator including a bimetal arm biased into engagement with said valve port and including means sealingly engaging said bimetal arm and said valve port;

heater circuit means for heating said bimetal arm causing said bimetal arm to deflect away from said valve port allowing communication of said at least one pressure source with said interior chamber of said enclosure;

means activating said heater circuit whenever the pressure level in said interior chamber varies from correspondence

with said varying electrical input signal in a direction tending to be corrected by communication of said at least one pressure source with said interior chamber;

whereby said heater circuit means is activated to cause said bimetal arm to create said communication of said at least one pressure source with interior chamber;

means discontinuing said heating by said heater circuit means upon achievement of a pressure level in said interior chamber in correspondence with said electrical signal, whereby said bimetal arm moves to sealingly engage said valve port.

4,184,634

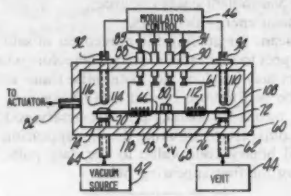
CLOSED LOOP CONTROL FOR AUTOMATIC TEMPERATURE CONTROL SYSTEM

Jeri A. Betts, Utica, Mich., and Van P. Spiker, Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 18, 1978, Ser. No. 900,544

Int. Cl.[2] G05D *11/16*

U.S. Cl. 236—13 **6 Claims**



1. An automatic temperature control system for regulating the temperature of a passenger compartment including a temperature sensor responsive to the actual temperature of the passenger compartment providing an electrical signal indicative thereof; a temperature control selector responsive to a desired temperature of the passenger compartment providing an electrical signal indicative thereof; an actuator position sensor responsive to the position of a blend air door providing an electrical signal indicative thereof; and a modulator control circuit responsive to the temperature sensor signal, the temperature control signal, and the actuator position signal, which regulates the vacuum level in a vacuum modulator to position the blend air door wherein the improvement comprises the modulator control circuit including:

bridge circuit means for sensing a difference between the desired temperature of the passenger compartment and the actual temperature of the passenger compartment and for generating an error signal indicating by its polarity the sense of the difference;

differential control means for detecting the sense of the error difference, for generating an open blend door signal over a first signal control line to a driver circuit controlling a vent port of the vacuum modulator in response to one polarity of error and for generating a close blend door signal over a second signal control line to a second driver circuit controlling a vacuum port of the vacuum modulator in response to the other polarity of error, wherein said open and close blend door signals are generated by sinking a predetermined current from said driver circuits over said control lines;

each of said driver circuits including an impedance and an interrupter contact connected in parallel between a supply voltage and an associated control line such that the control line which is initially at an off signal level will transition to an on signal level during said open and close blend door signals and further will transition from said on level to said off level when the interrupter contact closes, said driver circuit further including means for opening said port and thereafter closing said interrupter contact in response to said on level and for opening said interrupter contact and thereafter closing said port in response to said off level.

4,184,635

CONTROL UNITS FOR HEATING SYSTEMS

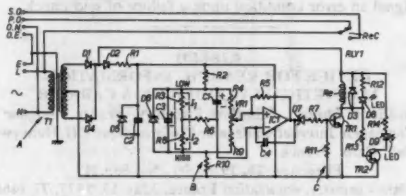
Edward J. Bloomfield, The Studio, Convent La., South Woodchester, Stroud, Gloucestershire, England

Filed Feb. 14, 1977, Ser. No. 768,631

Claims priority, application United Kingdom, Feb. 21, 1976, 6907/76; Feb. 27, 1976, 7871/76

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—419 **3 Claims**



1. In a solar heating system comprising a solar energy collector panel, primary and secondary heat stores, and first and second means operatively connected, respectively, to transfer collected energy from said energy panel to said primary and secondary heat stores; a control system comprising:

a primary control unit with two inputs connected to respective first and second temperature sensors and with two separate alternative primary and secondary outputs, said first and second sensors respectively sensing temperatures which are representative of the temperature of collected energy available at the solar energy collector panel and of the temperature in the primary heat store, said primary control unit including a comparison circuit, means for connecting said first and second temperature sensors to said comparison circuit, said comparison circuit being operative to sense the differential between said sensed output temperatures, switching means connected to said primary and secondary outputs for rendering said separate outputs alternatively operative, and circuit means connected to the output of said comparison circuit and to said switching means for controlling said switching means dependent upon the sensed temperature differential at the output of said comparison circuit, whereby said primary output is operative to energize said first means operative to transfer collected energy when said temperature differential exceeds a predetermined value and said secondary output is alternatively operative when said temperature differential is below a predetermined value; and

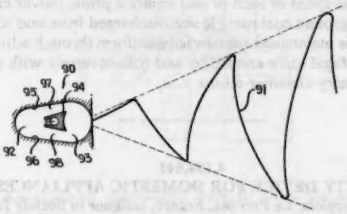
a secondary control unit similar to said primary control unit and operatively interconnected therewith to be energized when said alternative secondary output of said primary control unit is operative, said secondary control unit controlling the transfer of energy from said secondary heat store by said second means operative to transfer collected energy, and said secondary output of said secondary control unit being operative for further control purposes when the corresponding temperature differential sensed by the secondary control unit is less than said predetermined value.

4,184,636

FLUIDIC OSCILLATOR AND SPRAY-FORMING OUTPUT CHAMBER

Peter Bauer, 13921 Esworthy Rd., Germantown, Md. 20767

Filed Dec. 9, 1977, Ser. No. 859,145
Int. Cl.[2] B05B *1/08*; F15B *21/12*; F15C *1/08, 1/22*
U.S. Cl. 239—11 81 Claims



1. A fluid oscillator comprising:

nozzle means for forming and issuing a jet of fluid in response to application thereto of fluid under pressure;

an oscillation chamber having a common inlet and outlet opening, said oscillation chamber being positioned to receive said jet of fluid from said nozzle means through said common opening, said oscillation chamber including:

oscillation means for cyclically oscillating said jet back and forth across said chamber in a direction substantially transverse to the direction of flow in said jet; and

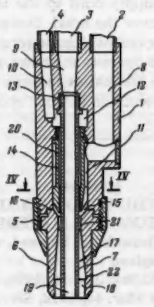
flow directing means for directing fluid from the cyclically oscillated jet out of said chamber through said common inlet and outlet opening.

4,184,637

OXYGEN-FUEL CUTTING TORCH

Nikolai Y. Mushenko, ulitsa N. Kurchenko, 15, kv. 48; Gennady P. Larin, ulitsa Sotsialistiches kaya, 57, kv. 5; Vladimir P. Seredenko, ulitsa S. Lazo, 45, kv. 10, and Ivan P. Svetikov, ulitsa Marata, 11, kv. 16, all of Kramatorsk, U.S.S.R.

Continuation of Ser. No. 772,445, Feb. 28, 1977, Pat. No. 4,136,827. This application Nov. 3, 1978, Ser. No. 957,479
Int. Cl.[2] B05B *7/06*
U.S. Cl. 239—419.3 2 Claims



1. An oxygen-fuel cutting torch comprising: a head having three ducts longitudinally extending therethrough, a first of said ducts communicating with a first annular chamber made in said head, a second of said ducts communicating with a second annular chamber, and a third of said ducts being wider as its outlet portion; three gas supply conducts, each being connected to said head and communicating with a respective longitudinal duct; an inner tip secured in the outlet portion of the third duct in said head and defining together with the surface of said duct said first annular chamber and a longitudinal annular metering passageway communicating therewith; an outer tip disposed coaxially with said inner tip, the interior portion of said outer tip and the exterior of a tubular insert disposed about said inner tip defining a transverse annular metering passageway communicating with said second annular chamber, said outer and inner tips defining a mixing channel there between communicating with said longitudinal annular metering passageway and said transverse

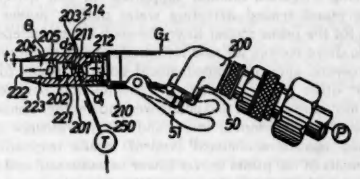
annular metering passageway for obtaining a fuel gas mixture and for letting it out; a nut coupling said outer tip and said head together; and said tubular component disposed in said longitudinal annular metering passageway to separate from this passageway said second annular chamber communicating with said transverse annular metering passageway; the internal surface of said outer tip, surrounding the annular mixing channel, being provided with a cylindrical portion and a tapered portion, whose diameter increases toward the outlet of fuel gas mixture, said portions being disposed along the fuel gas mixture stream.

4,184,638

LOW NOISE LEVEL, PRESSURE FLUID SPOUTING DEVICE

Takeo Ogasawara, and Shunichi Doi, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed May 1, 1978, Ser. No. 901,775
Claims priority, application Japan, May 2, 1977, 52/50998
Int. Cl.[2] B05B *7/04*; F01N *1/00*
U.S. Cl. 239—418 47 Claims



1. A low noise level, pressure fluid spouting device comprising

inlet means for introducing a pressure fluid therein provided at one end portion of said device,

nozzle means connected to said inlet means at one end thereof, for jetting the pressure fluid from the inlet means,

said nozzle means having an annular inner wall of a predetermined diameter,

said annular inner wall forming a nozzle port communicating with said inlet means;

enlarged means connected to the other end of said nozzle means and provided at the other end of said device, for spouting the pressure fluid from said nozzle means,

said enlarged means having an annular inner wall with a predetermined distance (d_2) between the opposed inner walls larger than that of said nozzle means and a predetermined length (l_0) in the axial direction thereof, and a dimensional relationship of said enlarged means comprising

$$0.67 \leqq l_0/d_2 \leqq 1.875,$$

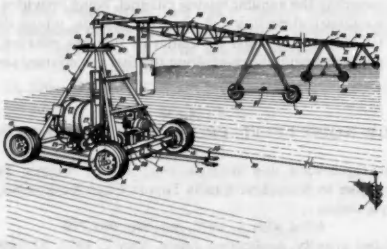
said annular inner wall comprising an enlarged passage communicating with said nozzle port of said nozzle means, whose exit is open to spout the pressure fluid,

said enlarged means having an annular outer wall,

whereby high negative pressure is produced at said inner wall of said enlarged means, the streams flowing out of said nozzle means steadily and stably cling to said inner

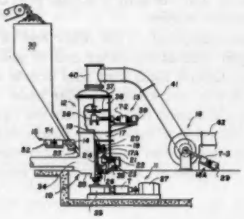
wall of said enlarged means and are spouted from the exit of said enlarged means as strong and steady streams beyond said inner wall of said enlarged means, and turbulence at the exit of said enlarged means and the production of screech are prevented.

4,184,639
SIDE WALKING IRRIGATION SYSTEM
Charles S. Miller, Cordele, Ga., assignor to Miller Brothers Farms, Inc., Cordele, Ga.
Filed Jul. 10, 1978, Ser. No. 923,153
Int. Cl.[2] B05B *3/00*
U.S. Cl. 239—177 **11 Claims**



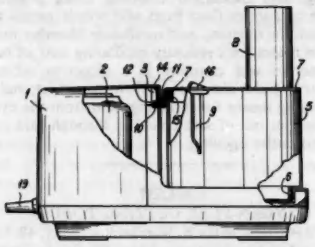
11. A crop irrigating apparatus comprising a prime mover wheeled tower, plural intermediate wheeled towers and an end wheeled tower in laterally spaced relationship, a generally horizontal irrigation conduit supported on said towers and having plural spaced irrigating water outlets, power drive means for the prime mover tower on such tower, independent electric drive motors for said intermediate and end towers on such towers, and electromechanical control means for said electric drive motors including a connection between the prime mover tower and said end tower and another connection between the prime mover tower and one intermediate tower, and said electro-mechanical control means responding to movements of the prime mover tower to cause said end tower and then said intermediate towers to move into lateral alignment with the prime mover tower.

4,184,640
COAL GRINDING APPARATUS FOR DIRECT FIRED BURNERS
Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124
Filed May 5, 1978, Ser. No. 903,236
Int. Cl.[2] B02C *25/00*
U.S. Cl. 241—34 **6 Claims**



1. In coal grinding apparatus for direct fired burners, the combination of: a roller mill having a grinding chamber with an inlet for the coal to be ground and a discharge for ground coal; grinding rolls rotatable within said grinding chamber for grinding coal by centrifugal force of said rolls against said grinding chamber; a source of gaseous medium connected into said grinding chamber for moving ground coal through said grinding chamber discharge; a second chamber connected to said grinding chamber adjacent said discharge for receiving the ground coal; rotary classifier means in said second chamber operable for classifying the ground coal for particle size and returning oversize coal to said grinding chamber; separate prime mover means connected to said grinding rolls and to said rotary classifier means; and control means connected to each of said prime mover means, said control means being effective to vary the speed of each of said separate prime mover means, whereby ground coal particle size discharged from said second chamber is maintained substantially uniform through adjusting the centrifugal force exerted by said rolls inversely with speed of said rotary classifier means.

4,184,641
SAFETY DEVICE FOR DOMESTIC APPLIANCES
Marcel Coggiola, Le Perreux, France, assignor to Societe Industrielle et Forestiere des Allumettes, Paris, France
Filed Mar. 21, 1978, Ser. No. 888,661
Claims priority, application France, Mar. 23, 1977, 77 08648
Int. Cl.[2] B02C *18/24*
U.S. Cl. 241—37.5 **11 Claims**

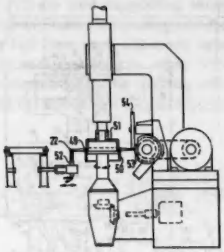


1. A food preparation appliance comprising, in combination; a housing, an electric motor within the housing, bowl receiving means on the housing, a work bowl for removable location in the receiving means, an on/off switch in the housing and adjacent to an opening formed therein, said switch being located in an electric supply cord to the motor, and a cover removably locatable over the bowl, characterised in that the cover includes a control tab which, on rotation of the cover on the bowl to secure the cover to the bowl, moves in a substantially horizontal plane and passes through the opening in the housing to hold said switch in its "on" condition.

4,184,642
APPARATUS FOR THE RECOVERY OF VULCANIZED ELASTOMERIC MATERIAL
William D. Bennett, Brownhills, England, assignor to Dunlop Limited, London, England
Division of Ser. No. 732,862, Jan. 15, 1976, Pat. No. 4,090,670.
This application Mar. 14, 1978, Ser. No. 886,902
Int. Cl.[2] B02C *23/00*
U.S. Cl. 241—65 **5 Claims**

1. Apparatus for the recovery for re-use of vulcanised elastomeric material from a surface of an article comprising said material the apparatus comprising mounting means for the article, heating means located radially of the mounted article for devulcanising the surface of the article, a rasping tool located radially of the mounted article and spaced circumferentially of the latter from the heating means, and means to cause relative rotation of the article and the heating means about the axis of the article when mounted such that the outer

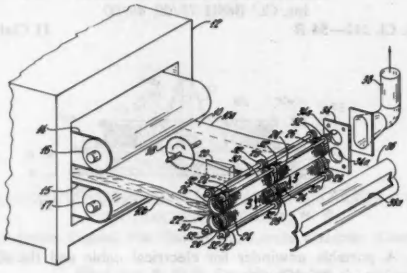
surface of the article is moved at a predetermined speed past the heating means and thereafter attacked by the tool to remove devulcanised elastomeric material from the article in particulate form.



4,184,643
APPARATUS FOR PRODUCING BLOWING WOOL INSULATION FROM GLASS WOOL MAT

Ralph E. McCort, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 5, 1978, Ser. No. 939,548
Int. Cl.[2] B02C *23/00, 23/30*
U.S. Cl. 241—87 1 Claim

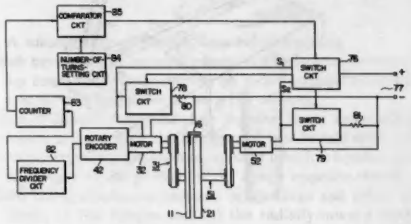


1. Apparatus for producing blowing wool insulation from glass wool mat comprising a pair of transversely adjacent open-ended shaftless elongated rotatable hollow cutting cylinders perforated with generally square holes to provide cylindrical grids each having exterior cutting edges extending respectively circumferentially and longitudinally of the cylinder, means for feeding glass wool mat between the cutting cylinders, a pair of open ring-shaped externally toothed shaftless gears fixedly secured respectively to opposite end portions of a first one of the cutting cylinders, a pair of open ring-shaped externally toothed shaftless gears fixedly secured respectively to opposite end portions of a second one of the cutting cylinders, the gears secured to the first one of the cutting cylinders being operatively engaged respectively with the gears secured to the second one of the cutting cylinders, a first pair of shafts parallel to the first cutting cylinder, disposed on the opposite side of a central rotational axis thereof from the second cutting cylinder, and respectively disposed on opposite sides of the central rotational axis of the first cutting cylinder, each shaft to the first pair having a pair of gears thereon operatively engaged respectively with the ring-shaped gears secured to the first cutting cylinder, a second pair of shafts parallel to the second cutting cylinder, disposed on the opposite side of a central rotational axis thereof from the first cutting cylinder, and respectively disposed on opposite sides of the central rotational axis of the second cutting cylinder, each shaft of the second pair having a pair of gears thereon operatively engaged respectively with the ring-shaped gears secured to the second cutting cylinder, means mounting the first and second pairs of shafts with the gears thereon to confine therebetween the shaftless cutting cylinders with the shaftless ring-shaped gears secured thereto, and means for removing cut glass wool mat from the interior of the cutting cylinders.

4,184,644
WINDING MACHINE

Fumikazu Itoh, Fujisawa; Mitsuo Sato, Yokohama; Nobu Kamita, Hitachi; Takashi Kobayashi, Fujisawa, and Noboru Sugimoto, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 29, 1978, Ser. No. 937,810
Claims priority, application Japan, Sep. 2, 1977, 52-104961
Int. Cl.[2] H01F *41/08*
U.S. Cl. 242—4 B 4 Claims



1. A winding machine comprising:

a traveling ring including an opening for introducing a part of an annular member within the inside of the ring, and a guide member for guiding a wire toward said annular member, said traveling ring being rotatably supported;

a shuttle including an opening adapted to be closed and opened selectively for introducing a part of said annular member within the inside of the shuttle, and a groove for storing the wire on the outer periphery thereof, said shuttle being rotatably supported on the same axis as said traveling ring in a predetermined spaced and facing relation with said traveling ring;

first driving means for rotating said traveling ring in the direction opposite to that of storing said wire on said shuttle so that the wire stored in said shuttle is wound on said annular member in the direction opposite to that of storage, said first driving means applying a braking force to said traveling ring in response to the rotation of said traveling ring following said shuttle by the tension of said wire when said wire is wound on said annular member in the direction of storage by the rotation of said shuttle;

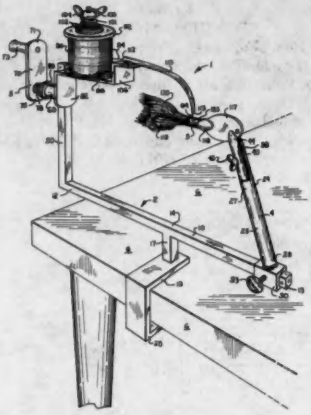
second driving means for rotating said shuttle in the direction of storage for storing the wire in the groove of said shuttle by rotating said shuttle in the direction of storage, and for winding on said annular member in the direction of storage said wire stored in said shuttle, said second driving means applying a braking force to said shuttle in response to the rotation of said shuttle following said traveling ring by the tension of said wire when said wire is wound on said annular member in the direction opposite to that of storage by the rotation of said traveling ring; and

holding means for holding said annular member in such a manner that the part of said annular member introduced within the inside of said traveling ring and said shuttle crosses said axis common to said traveling ring and said shuttle at the winding position of said wire, said holding means rotating said annular member about the axis of said annular member in synchronism with the rotation of selected one of said traveling ring and said shuttle when said wire is wound on said annular member.

4,184,645
FLY TYING APPARATUS

David M. Starling, 7602 Goddard Dr., #102, Lenexa, Kans. 66215

Filed Jun. 22, 1978, Ser. No. 917,906
Int. Cl.[2] B65H 81/08; A01K 85/00
U.S. Cl. 242—7.01 4 Claims



1. An apparatus for tying a fishing fly and the like comprising:

(a) an elongate support member;

(b) an elongate arm mounted on said support member and extended generally upwardly therefrom; said arm having a releasable gripping means spaced from said support member for holding a fly to be tied;

(c) a thread dispenser mounted on said support member and spaced laterally apart from said arm; said thread dispenser including means for retaining a supply of thread thereon, a rotative assembly revolutionary around an axis extended generally toward said gripping means, and a thread guide adapted for receiving thread from said supply thereof and having an outlet end extending substantially adjacent said gripping means and disposed from said rotative assembly axis for wrapping thread around the fly held by said gripping means;

(d) a standard extended upwardly from said support member and having a slideable fastener connecting said thread dispenser thereto, thereby permitting selective positioning of said thread dispenser on said standard;

(e) said fastener includes a sleeve connected thereto, said rotative assembly being extended through said sleeve;

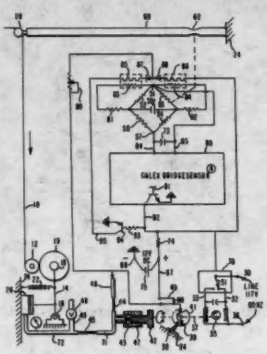
(f) resilient means connected to said sleeve and urging said rotative assembly to a preferential position relative to said standard, whereby said thread guide is movable relative to the fly held by said gripping means upon compression of said resilient means.

4,184,646
YARN WINDING APPARATUS

John S. Seney, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 4, 1979, Ser. No. 880
Int. Cl.[2] B65H 54/52, 59/38
U.S. Cl. 242—45 1 Claim

1. A yarn winding apparatus comprising: a drive roll in surface driven engagement with a yarn package onto which a running yarn line is wound under tension; an electrical resistance strain gauge transducer for measuring tension in the yarn line and generating a voltage proportional thereto; an electropneumatic control system responsive to said voltage for regulating the force between said drive roll and said yarn package; a heat responsive negative feedback voltage generating resistance bridge circuit connected to said electrical resistance

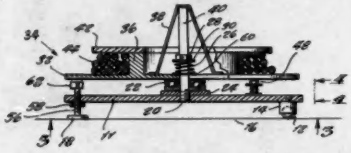


strain gauge transducer to shunt the output thereof; and means for heating a portion of said negative feedback bridge circuit to change the resistance thereof.

4,184,647
ELECTRICAL CABLE UNWINDER

Arthur G. Rourke, 3 Robin La. (Trailer Park), Bayshore, N.Y. 11706

Filed Feb. 7, 1977, Ser. No. 766,140
Int. Cl.[2] B65H 75/00, 49/00
U.S. Cl. 242—54 R 11 Claims



1. A portable unwinder for electrical cable and the like comprising in combination:

a base;

a stud centrally located upon and extending upwards from the base;

a thrust bearing about the stud and resting upon the base;

a rotatable disc resting upon the thrust bearing and approximately centered relative to the stud; and

means assembled to and projecting upwards from the base for supporting and retarding the rotation of the disc, the combination permitting rotation of the disc relative to the base and usable as an unwinder by placing coiled material upon the disc and pulling a loose end of the material, whereupon the disc and the coil upon it rotate in response to the pulling force.

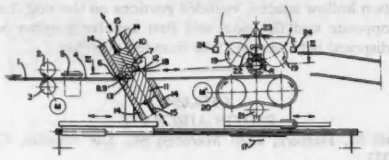
4,184,648
METHOD AND DEVICE FOR CONTINUOUSLY PRODUCING ROLLS OF WEB MATERIAL

Wolfgang Mergell, Niederbrol, Fed. Rep. of Germany, assignor to Mergell Kommanditgesellschaft, Niederbrol, Fed. Rep. of Germany

Filed Jun. 21, 1977, Ser. No. 808,652
Int. Cl.[2] B65H 19/26, 17/14
U.S. Cl. 242—56 R 3 Claims

1. A method of producing rolls of web material, especially of self-supporting material, in a continuous process, which includes in combination in a cycle the steps of: at a first station

withdrawing web material from a supply source and automatically winding upon supporting means a plurality of layers of web material so as to form a starting roll, moving the thus formed starting roll on said supporting means to a second station, at said second station separating said supporting means and said starting roll from each other and returning said supporting means to said first station while winding additional layers of web material onto said starting roll at said second station, and when the roll at said second station holds a desired



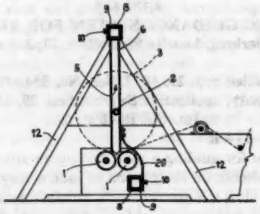
number of coils of web material cutting off ahead of said first station the supply of web material from said supply source to said last mentioned roll, removing said last mentioned roll while repeating the above mentioned cycle, and the additional step of subsequently to cutting off the supply of web material from said supply source to the roll in said second station, also moving said second station with roll of web material away from said first station to such an extent that the pertaining cut off end section is beyond said first station when seen in the direction of feeding the web material to said station.

4,184,649

TAKING UP MACHINE FOR FABRICS OR PRODUCTS IN CONTINUOUS ROLL

Salvatorino Pagani, Via Unione 12, Lurate Caccivio (Como), Italy

Filed Jun. 9, 1978, Ser. No. 914,296
Claims priority, application Italy, Jun. 14, 1977, 24665 A/77
Int. Cl.[2] B65H *17/08*
U.S. Cl. 242—66 **5 Claims**



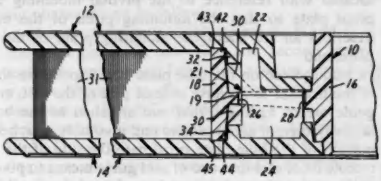
1. A machine for taking up fabrics or products in a continuous roll, comprising at least one pair of powered horizontal driving rollers, wherein said rollers are arranged transversely of a vertical carrying structure provided with two parallel horizontal lower and upper rails, end guides slidably mounted on said rails, two grooved vertical uprights supported by said end guides for travel therewith, said uprights having inserted therein the ends of supporting warping woofs for fabric rolls for free slidable and rotational movement.

4,184,650

PLASTIC TAPE REEL

Norman E. Nelson, Roseville, Minn., and Robert C. Cheasick, Camarillo, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 8, 1978, Ser. No. 903,497
Int. Cl.[2] B65H *75/18*
U.S. Cl. 242—71.8 **11 Claims**



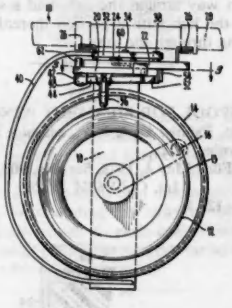
1. A substantially-all-plastic tape reel comprising
a hub having a tape-receiving outer rim and a spindle-receiving inner rim interconnected by a thin radially-extending central web formed with an array of slots,
a pair of flanges clamped tightly together by an array of lugs which project from the flanges and nest in said slots, said lugs comprising projections, each of which is bonded only at its apex to the portion of the flange opposite thereto
there being clearances between (a) the lugs and other elements of the flanges and (b) the radially-inward facing surfaces of the hub at its outer rim and at its slots to permit such surfaces to move radially-inwardly under high tape-winding forces without substantially transmitting such forces to the flanges.

4,184,651

FISHING REEL ASSEMBLY

Harry R. McConachy, 60 Moonya Rd., Murrumbeena, Victoria, Australia

Filed Jun. 6, 1978, Ser. No. 913,012
Claims priority, application Australia, Jun. 20, 1977, PD0507
Int. Cl.[2] A01K *89/015*
U.S. Cl. 242—84.2 B **6 Claims**



1. A fishing reel assembly of the side cast type for storing and displacing a line comprising:
(1) a circular spool having a casting edge and pivotably mounted for movement about a diametrical axis;
(2) a pivotably mounted line retrieval guide means positioned for reducing the possibility of a fishing line running over the casting edge of the spool whilst the line is being retrieved and for pivoting clear of the casting edge of the spool upon pivoting of the spool to the casting position;
(3) a base plate disposed perpendicular to the pivot axis of

the spool and provided with means for attachment to an external fishing rod;

(4) a pivot plate disposed perpendicular to the pivot axis of the spool, said pivot plate being pivotably mounted about a point on the base plate for pivotal movement with the spool relative to the base plate;

(5) mounting means comprising an L-shaped bracket provided with a longitudinal slot, said bracket having one end pivotably mounted about a mounting point eccentrically located with reference to the pivotal mounting of the pivot plate so that the mounting point of the bracket describes an arc about the mounting point of the pivot plate, and

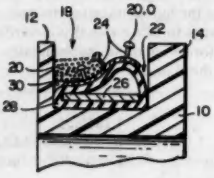
(6) a stud located on the base plate and disposed in the slot of the bracket to traverse at least part of the slot, and the guide means having a first end attached to the bracket laterally thereof and a second end pivotably attached to a portion of the base plate proximate the side of the spool remote from said first end of said guide means to pivot the guide means clear of the casting edge of the spool in the casting position.

4,184,652

BOBBIN SPOOL

Herman Rovin, Norwalk, Conn., assignor to Automatech Industries, Inc., Bridgeport, Conn.

Filed Apr. 28, 1978, Ser. No. 900,977
Int. Cl.[2] B65H *75/14, 75/28*
U.S. Cl. 242—118.2 **3 Claims**



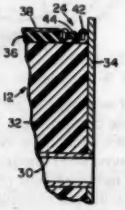
1. A bobbin spool for an automatic sewing machine of the self-loading type comprising a hub, spaced parallel flanges at opposite ends of the hub, a thin wall tube of gum rubber wrapped part way around the hub, and a spring clamp disposed about the hub with a portion thereof intermediate its ends extending through the tube.

4,184,653

SPOOL FOR FILAMENT WINDER

Roy T. Bonzo, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 4, 1978, Ser. No. 903,001
Int. Cl.[2] B65H *75/28*
U.S. Cl. 242—125.1 **3 Claims**



3. A spool adapted for use in the winding of filament, said spool comprising

a cylindrically shaped body having a longitudinally disposed bore therethrough,

a first annular member circumferentially disposed around one end of said body, and

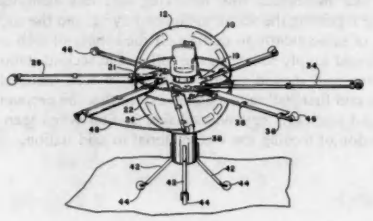
a hollow, annular member of resilient material circumferentially disposed around said one end of said body adjacent said first member, the space between said first member and said resilient member constituting a filament receiving region, said resilient member being flat on the side thereof which contacts said body, said resilient member having two hollow spaced, rounded portions on the side thereof opposite said flat side, said first annular member being disposed between said two rounded portions.

4,184,654

ROTOR AIRCRAFT

Samuel M. Herrera, 2430 Marengo St., Los Angeles, Calif. 90033

Filed Jun. 26, 1978, Ser. No. 918,935
Int. Cl.[2] B64C *27/02*
U.S. Cl. 244—8 **3 Claims**



1. An aircraft comprising a spherical body composed of hemispherical upper and lower halves; a plurality of freely rotating blades mounted between said halves each blade being pivoted on a horizontal arm for vertical movement thereon; stops above and below said blades for limiting said movement; funnel-shaped counterweights mounted at the end of said arms and having their open ends directed in the same direction as the leading edges of said blades; a tubular vertical member adapted to hold a rocket therein for vertical propulsive motion; said lower hemisphere being secured to said member; a landing gear secured to said member and horizontally disposed rockets on each side of said lower hemisphere.

4,184,655

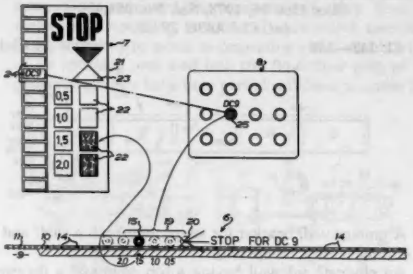
PARKING GUIDANCE SYSTEM FOR AIRCRAFT

Nils-Eric Anderberg, Lauritz Weibulls v. 27, 223 65 Lund, Sweden

Filed Sep. 19, 1977, Ser. No. 834,613
Claims priority, application Sweden, Sep. 29, 1976, 7610777
Int. Cl.[2] B64F *1/36*
U.S. Cl. 244—114 R **19 Claims**

1. A system for guiding a pilot taxiing an aircraft, having a plurality of wheels, on the ground in such a way that the pilot is enabled to stop the aircraft with satisfactory accuracy at a predetermined stopping point in a parking place, said system comprising a transmitter unit disposed in the region of the parking place and having a plurality of transmitter elements disposed on the surface of the ground successively following each other in a line at spaced locations in the direction of travel of the aircraft as the aircraft approaches the stopping point to cause a selected one of the plurality of wheels to roll successively over the transmitter elements as the aircraft approaches the stopping point; and an information unit operatively connected to the transmitter unit to provide, in response to the passage of said one wheel over successive ones of the transmit-

ter elements toward the stopping point, a continuous quantitative indication of the remaining distance between the one of



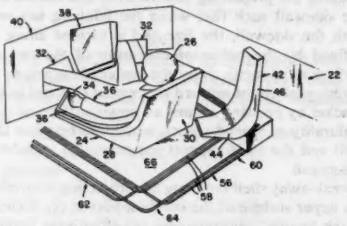
said spaced locations over which said one wheel is rolling and the stopping point.

4,184,656

SEAT TRACK MECHANISM FOR OPERATING STATION OF AIRCRAFT REFUELING BOOM

Tendon Wakeley, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 3, 1978, Ser. No. 866,628
Int. Cl.[2] B64D *11/06, 39/00*
U.S. Cl. 244—118.6 **24 Claims**



1. In an operating station, such as an operating station to control a refueling boom of a tanker aircraft, a track and seat assembly by which a seat is able to move along its track, while maintaining a predetermined orientation with respect to said aircraft, said track and seat assembly comprising:

a. a supporting structure, such as a supporting floor for an aircraft operating station, said supporting structue having a longitudinal axis and a transverse axis,

b. a track mounted to said supporting structure, said track comprising at least three rail members, namely rail A, rail B and rail C, said track defining a line of travel, said line of travel having at least first and second travel line segments,

c. a base for a seat, such as a seat at said operating station, said base being arranged for travel over said support structure along said line of travel, said base having "X" and "Y" axes of orientation, which axes of orientation have an angular relationship with said line of travel,

d. said base having at least three tracking members, namely member A, member B and member C, arranged in a predetermined base pattern relative to the axes of orientation, which tracking members track to, respectively, rail A, rail B and rail C,

e. each rail having a related rail axis along which its related tracking member travels,

f. said rails each having an instantaneous tracking point at which its related tracking member tracks at any one time, said rail A having an instaneous tracking point A, said rail B having an instantaneous tracking point B, and said rail C having an instantaneous tracking point C,

g. said rails having a rail configuration arranged relative to the base pattern of the tracking members, with the first travel line segment of the track having a first angular relationship with the axes of orientation of the base at the first travel line segment, and the second travel line segment having a second different angular relationship with the axes of orientation of the base, said rail configuration being characterized as follows:

(1) said instantaneous tracking points A, B and C at any one location along said first and second travel line segments are spaced from one another in a tracking pattern identical to the base pattern of the tracking members A, B and C, respectively,

(2) said tracking pattern, as defined by tracking points A, B and C, has "X" and "Y" axes which at said first travel line segment have the same angular relationship with the first travel line segment as does the base pattern at the first travel line segment, and at said second travel line segment have the same angular relationship as the base pattern with said second travel line segment,

(3) each of said rails has its rail axis parallel to a path of travel of its related tracking member at its instantaneous tracking points,

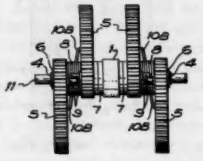
whereby said base is able to travel over said track, while maintaining its axes of orientation in a predetermined alignment with respect to said supporting structure, regardless of angular variations between said line of travel and the axes of orientation of the base.

4,184,657

CLIMBING AIDS

Raymond D. Jardine, General Delivery, Yosemite National Park, Calif. 95389

Filed May 30, 1978, Ser. No. 911,037
Int. Cl.[2] A47G *29/00;* **B66D** *1/00*
U.S. Cl. 248—1 **10 Claims**



1. A climbing aid comprising a support bar, a spindle mounted on the support bar, at least two cam members pivotally mounted on the spindle and adapted for opposite pivotal movement from a "closed" position to an "open" position, means to apply a force to each cam member to urge it to its "open" position, an operating bar slidably mounted on the support bar and connected to each cam member and there being at the opposite end of the support bar to the spindle an attachment point for a climbing rope.

4,184,658

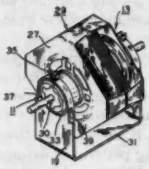
CUSHION MOUNT FOR PRIME MOVER

Manoj M. Barahia, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 13, 1978, Ser. No. 877,084
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—606 **7 Claims**

1. An improvement in a cushion mount for mounting prime movers and the like on a mounting bracket therefor, said cushion mount comprising a generally rigid outer ring portion formed of reinforced polypropylene and having an outer peripheral configuration adapted for engagement with a part of

the mounting bracket and an inwardly projecting rib on an inner periphery of said outer ring portion, and a generally resilient inner ring portion formed of an elastomer blend of poly(monoalkenyl arene)/hydrogenated polydiene/poly(-monoalkenyl arene) block copolymer and a polyamide polymer, said inner ring portion being molded directly within said



inner periphery of said outer ring portion and having an inner peripheral configuration adapted for gripping engagement with a part of the prime mover, said inner and outer ring portions defining a substantially integral cushion ring which is relatively rigid adjacent its outer periphery and relatively resilient adjacent its inner periphery.

4,184,659

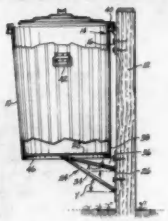
RECEPTACLE SUPPORT

Erik R. Abrahamson, 5221 17th Ave. NE., Seattle, Wash. 98105

Continuation-in-part of Ser. No. 842,672, Oct. 17, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,568

Int. Cl.[2] A47G *23/02, 29/00*

U.S. Cl. 248—146 **12 Claims**



1. An apparatus for supporting a garbage can so that it cannot be easily tipped over by an animal, comprising:

downwardly opening hook means adapted to engage an upperrim portion of the garbage can;

bottom support means for elevating and supporting the bottom of the garbage can, said bottom support means including pedestal means for underlying and contacting the bottom of the garbage can when the can is engaged by said hook means and is substantially vertically oriented, said bottom support means providing open space below the bottom of the garbage can on the hood means side of the pedestal means into which the lower-inner portion of the garbage can may be tilted while on said pedestal means; and,

said pedestal means being positioned to contact the bottom of the garbage can at a location sufficiently horizontally outwardly from said hook means that the distance between said pedestal contact location and said hook means is greater than the height of the garbage can to enable the rim of the garbage can to disengage from the downwardly opening hook means when the garbage can is tilted into said open space.

4,184,660

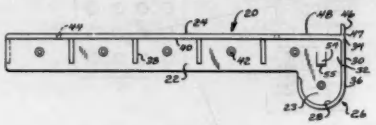
SHELF AND ROD WALL BRACKET

William J. Anderson, Taylorsville, Miss., assignor to Anderson Metal Products Corp., Taylorsville, Miss.

Filed Oct. 16, 1978, Ser. No. 951,409

Int. Cl.[2] A47G *29/02*

U.S. Cl. 248—235 **1 Claim**



1. A unitary wall bracket for supporting both a shelf and a rod simultaneously, comprising:

a. An elongate sidewall having a top edge and a forward end;

b. an elongate shelf support extending integrally from said top edge of said sidewall at a right angle thereto;

c. a rod support projecting integrally from said forward end of said sidewall at a right angle thereto, said rod support having an upwardly opening arcuate surface portion for receiving one end of a clothes rod comforming thereto;

d. a frontispiece which projects at a right angle from the forward end of the sidewall and extends between and is connected with the rod support and shelf support, said frontispiece being integral with said rod support and shelf support and sidewall to strengthen the associated structure; D

e. a spring latching tab including a free end thereof, the latching tab projecting downwardly and outwardly from the sidewall such that when the latching tab conforms with the sidewall, the free end is located along the arc defined by the radius of curvature of the rod support surface and directly above the center of the arc, so that the latching tab limits upward movement of a rod in the wall bracket by pressing against an upper surface of the rod;

f. a plurality of spaced gussets extending between the sidewall and the shelf support for enhanced support of the latter; and

g. a break-away shelf retaining tab projecting vertically from the upper surface of the shelf support at the forward end of the bracket, said retaining tab effectively limiting forward motion of a shelf resting on the shelf support,

wherein said wall bracket is constructed of plastic into a single, continuous piece of material.

4,184,661

DISCONNECTABLE COUPLING FOR A SPLIT SYSTEM AIR CONDITIONER

Gerald J. Kushner, and Edward Raleigh, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Feb. 28, 1977, Ser. No. 772,657

Int. Cl.[2] F16K *31/02*; F25D *19/00*

U.S. Cl. 251—82 **8 Claims**

7. A valving system for providing a disconnectable coupling between the end portions of conduits containing a fluid charge under pressure, a valve assembly in each of said end portions, comprising:

a valve body having a passageway providing a flow path for said fluid between an inlet and an outlet;

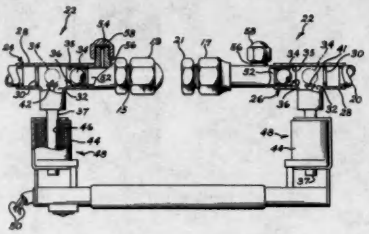
a valve member arranged in said body being movable between an open and closed position;

a valve retaining area communicating with said passageway being dimensioned to accommodate said valve member below the fluid flow path defined by said passageway;

a valve seat arranged in said passageway between said retaining area and said outlet end being dimensioned to accommodate said valve member in a sealing relationship;

actuating means including a housing communicating with

said retaining area; an actuating member arranged for reciprocal movement in said housing including a portion arranged to engage said valve member in retaining area, a pair of driving means dimensioned to simultaneously be removably positioned on cooperating valve housing means, said actuating member of each valve assembly being activated to move its respective valve member out of its retaining area and into the fluid flow path of its passageway only for a time period sufficient to cause the



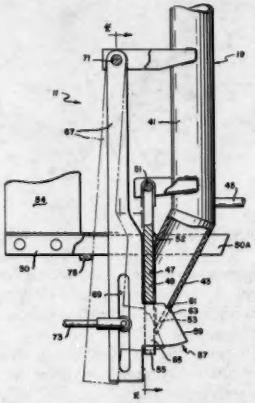
valve members to move to their closed position when fluid flow is present to retain said charge, said valve members are maintained in their closed position when fluid pressure in their respective passageway side of said closed valve is greater than the fluid pressure on the other side of said closed valve, and said valve member being returned to said retaining area solely by the fluid pressure on said other side which is equal to or greater than the fluid pressure on said passageway side.

4,184,662

VALVE FOR CONTROLLING SOLIDS FLOW

David K. Feldman, Fairlawn, N.J., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 25, 1978, Ser. No. 927,806
Int. Cl.[2] F16K *15/03, 31/44*
U.S. Cl. 251—82 **10 Claims**



1. In a valve for controlling solids flow having a tubular body terminating in its bottom portion with a valve seat and a closure plate which is biased to normally close the valve seat, the improvement comprising:

a longitudinal slot along a portion of the valve body length communicating with the valve seat for passing a regulated flow of solids;

a movable key plate adapted to slide within and close the longitudinal slot;

means for positioning the key plate in an inserted position to close the slot, in a retracted position to open the slot and in intermediate positions to regulate solids flow; and

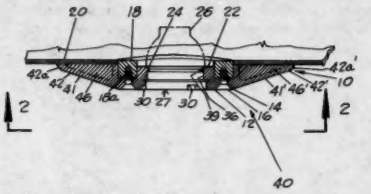
means responsible to the position of the key plate for opening the closure plate away from the valve seat when they key plate is in the retracted position.

4,184,663

COMBINATION TANK CAR VALVE SKID AND VALVE SEAT

Dallas W. Rollins; Gunter R. Behle, both of St. Charles, and Charles E. Reedy, Bridgeton, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 15, 1977, Ser. No. 860,987
Int. Cl.[2] F16K *35/00*; B61D *5/00*
U.S. Cl. 251—144 **18 Claims**



1. In a bottom operable tank car lading valve assembly, a combination skid and lading valve seat for a lading valve closure comprising:

a generally annular body portion having fastening means for attaching the combination skid and valve seat to a tank car universal flange; a generally cylindrical portion extending inwardly and upwardly from said body portion having an opening for lading flow therethrough and including a valve seat for a valve closure; a skid portion integral with said cylindrical portion and said body portion extending longitudinally outwardly from said body portion and abutting the tank bottom at the end portion thereof; the vertical extent of said skid portion decreasing as said skid portion extends outwardly from said universal flange to define a tapered lower surface; said fastening means maintaining said skid portion abutting the tank bottom without attachment to the tank bottom; whereby said skid portion protects said lading valve closure and said lading valve seat against impacts which might normally cause unseating of the valve closure and escape of the lading in the absence of the skid portion.

4,184,664

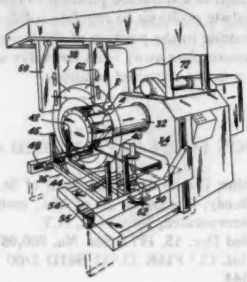
EXPANDING MANDREL AND A MACHINE FOR THE USE OF SAID MANDREL

Jean P. Ouriet, Antony; Albert Recule, Igny, and Georges Roll, Malakoff, all of France, assignors to Commasariat a l'Energie Atomique, Paris, France

Filed Apr. 19, 1978, Ser. No. 897,881
Claims priority, application France, Apr. 22, 1977, 77 12176
Int. Cl.[2] B60C *25/14*
U.S. Cl. 254—50.2 **8 Claims**

1. An expanding mandrel comprising a cylindrical body provided at the periphery with a plurality of jaws which are capable of radial displacement under the action of control means, wherein each jaw is supported by two radial columns which are capable of translational motion and each placed at one end of the jaw, both support columns being driven by means of two first crank-arm rigidly fixed to two toothed wheels disposed in meshing engagement with each other, one toothed wheel being coupled with a second crank-arm, and

wherein an actuating rod is mounted in the axis of the mandrel body and capable of translational motion along said axis, said



rod being adapted to actuate all the aforesaid second crank-arms which correspond to said plurality of jaws.

4,184,665

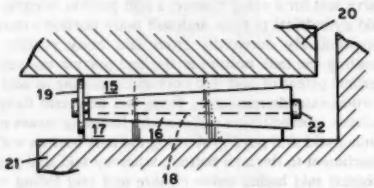
THERMALLY ACTUATED WEDGE BLOCK

Charles C. Queen, Jr., Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 8, 1978, Ser. No. 967,665

Int. Cl.² B66F *11/00*

U.S. Cl. 254—104 **4 Claims**



1. An improved wedge block that automatically changes its thickness in response to changes in ambient air temperature comprising a first wedge member provided with external tapered surfaces and with an axial hole, a pair of second wedge members provided with internal tapered surfaces matching the tapered surfaces of said first wedge member, said first and second wedge members being constructed from a low thermal expansion material, a retaining end plate abutting against the ends of said second wedge members and provided with a hole, a tension rod provided with a head, said rod extending through the hole in said end plate and extending through the axial hole in said first wedge member with the head of said rod abutting against said end plate, and a nut affixed to the end of said tension rod, said nut abutting against the end of said first wedge member to maintain it in intimate contact with said second pair of wedge members along the tapered surfaces thereof, said tension rod being constructed from a high thermal expansion material, whereby a change in the temperature of the ambient air at said wedge block from room temperature to a lower temperature causes said tension rod to automatically contract axially thereby effecting an increase in said thickness of said wedge block.

4,184,666

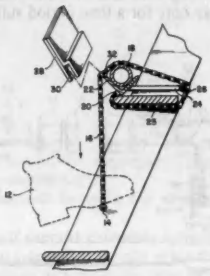
FLEXIBLE PIPE VICE FOR USE WITH A LADDER

Robert R. Boitz, Box 346, Lincoln City, Oreg. 97367

Filed May 23, 1978, Ser. No. 908,759

Int. Cl.² B25B *13/52*

U.S. Cl. 269—98 **6 Claims**



1. A pipe vice, comprising:

a base,

a chain attached to the base, and

means of engaging the chain to the work piece and to a support, further comprising:

a first bar attached to a distal end of the chain to hold the work piece to the base, and the base to a support, said bar of a size and shape to be engaged by a foot of the user so as to apply tension to the chain for holding the work piece to the base and the base to a support.

4,184,667

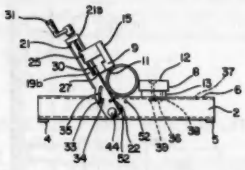
WORKPIECE SUPPORTING AND CLAMPING ARRANGEMENT

Lorenzo E. Alessio, Cairoli, Italy, assignor to Black & Decker Inc., Newark, Del.

Filed Feb. 22, 1978, Ser. No. 880,249

Int. Cl.² B25B *1/04*

U.S. Cl. 269—139 **28 Claims**



1. A workpiece supporting and clamping arrangement comprising:

a supporting structure defining surface support means;

a first elongated top member having an upper surface and being supported by said supporting structure on said surface support means;

a second elongated top member having an upper surface, said upper surfaces lying in a common substantially horizontal plane;

said elongated top members having respective mutually adjacent side walls defining clamping surfaces;

a guiding structure mounted on said supporting structure for carrying and guiding said second elongated top member relative to said supporting structure;

means arranged on said guiding structure for linearly moving said second top member along said guiding structure so as to adjust the position of said second elongated top

member with respect to said first elongated top member; and,

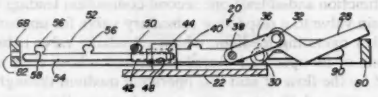
pivot means pivotally connecting said guiding structure to said supporting structure so as to permit said guiding structure and said second elongated top member to be pivotally rotated from a first position on said surface support means whereat said upper surfaces are in said horizontal plane to a second position whereat said second top member is in a plane transverse to said horizontal plane so as to cause said clamping surfaces and said surface support means to conjointly define a three point clamping system.

4,184,668

ADJUSTABLE QUICK ACTING VISE

June A. Johnson, 77 S. Avery, Pontiac, Mich. 48056

Filed Jul. 17, 1978, Ser. No. 925,231
Int. Cl.² B25B *1/14*
U.S. Cl. 269—211 **4 Claims**



1. An adjustable quick acting vise comprising:

a base fixed to a work surface;

a pair of spaced apart longitudinal rails having first and second ends attached thereto;

a lever positioned between said rails and pivotally attached at one end to said base at a pivot point;

a pivot pin pivotally attached to said lever at a position spaced above said pivot point;

a pair of links spaced on either side of said lever and attached at one end to said pivot pin and at the other end to a drive pin;

said drive pin is slidingly connected to a first end of a drive rod, said drive rod is slidingly supported longitudinally by a support bore in said base, the combined action of said lever, said pair of links, said pivot pin, said drive pin and said drive rod constituting a longitudinal toggle action on said drive rod when said lever is actuated;

a threaded rod threadingly supported at the second end of said drive rod by a threaded bore;

a cross pin running perpendicular to said threaded rod and fixedly attached to the outer end of said threaded rod, spaced above the center of said rod;

said pair of spaced apart longitudinal rails having each a long groove, said long groove beginning near said first end and ending spaced apart from said second end of said spaced apart longitudinal rails the width of said long groove is slidingly larger than the diameter of said drive pin and said cross pin; a multiplicity of pairs of short grooves, said short grooves equal in width to the width of said long grooves, their length being twice their width with round ends, each short groove is joined to its adjacent long groove by a channel, said channel having a width equal to the width of said grooves;

the length of said drive pin and said cross pin exceeding the spacing of said spaced longitudinal rails.

4,184,669

OPERATION ON WORKPIECES

Hubert Bald, 26 Dornenstrasse, 5820 Gevelsberg, Fed. Rep. of Germany

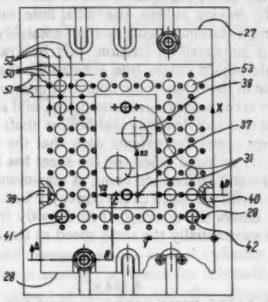
Filed Dec. 21, 1977, Ser. No. 862,806
Int. Cl.² B23Q *3/00*
U.S. Cl. 269—309 **20 Claims**

1. A clamping body for use in the performance of an operation on a workpiece and comprising:

(a) a receiving surface to receive a workpiece,

(b) at least two special positioning recesses at said receiving surface of said clamping body, said special positioning recesses each having a cross-section which narrows in a direction away from said receiving surface and being adapted to receive a positioning element for the use of positioning said workpiece free of play, and

(c) reference means disposed at a precise predetermined position relative to a three-dimensional rectangular reference coordinate system defined by said at least two special positioning recesses in the plane of said receiving surface and being detectable by measurement means even if the whole of said receiving surface is covered by said workpiece, wherein at least one precise measure of said predetermined position extending in parallel with one axis of said rectangular reference co-ordinate system is derivable from said reference means.

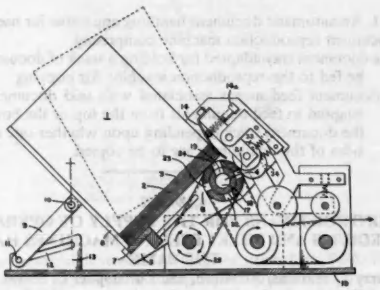


4,184,670

APPARATUS FOR REMOVING FLAT ELEMENTS FROM A STACK THEREOF

Bengt Rosendahl, Kalmar, Sweden, assignor to AB Sture Ljungdahl, Nybro, Sweden

Continuation of Ser. No. 761,361, Jan. 21, 1977, abandoned. This application May 15, 1978, Ser. No. 905,864
Claims priority, application Sweden, Feb. 13, 1976, 7601628
Int. Cl.² B65H *3/10, 1/06*
U.S. Cl. 271—12 **9 Claims**



1. Apparatus for feeding sheets one by one from the bottom of a stack comprising first and second spaced support means for supporting the bottom of a stack of sheets, said first means comprising a plurality of juxtaposed rotatable units, means for rotating at least one of said units intermittently in a given direction of rotation to feed the lowermost sheet in the stack intermittently forwards, said means for rotating said at least one unit intermittently comprising a Maltese cross coupled to said at least one unit for rotating the same stepwise between

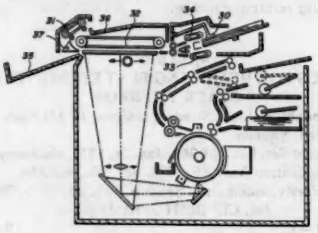
successive stationary positions and providing maximum speed between successive stationary positions, means for displacing said second means to a selected pre-determined stationary position, suction means coupled to said first means to apply suction force to the lowermost sheet in the stack in the course of intermittent rotation of said first means, and a conveyor belt positioned relative to said first means and driven at a predetermined speed to receive the intermittently fed sheets and to advance the same, the rotated unit of said first means comprising a roller having at least one radial hole, said suction means comprising a stationary hollow shaft rotatably supporting said roller and subjected to suction, said hollow shaft having a radial hole which comes into substantial alignment with the radial hole in the roller in the course of intermittent rotation of said roller when said roller is stationary, said radial hole in said roller and said radial hole in said hollow shaft being positioned and having respective extents such that the suction effect is substantially reduced when the fed sheet has entered the conveyor belt, said roller then being at maximum speed which is correlated with the speed of the conveyor belt so that when the fed sheet enters the conveyor belt directly from the roller it will have substantially the same speed as the conveyor belt.

4,184,671

AUTOMATIC DOCUMENT HANDLER IN DUPLEX COPYING MACHINE

Yusuke Sasamori, Tokyo, Japan, assignor to Rank Xerox Limited, London, England

Filed Mar. 7, 1978, Ser. No. 884,332
Claims priority, application Japan, Mar. 15, 1977, 52-27552
Int. Cl.² B65H *3/00*
U.S. Cl. 271—18 **6 Claims**



1. An automatic document handling apparatus for use with a document reproduction machine comprising

a document tray adapted for holding a stack of documents to be fed to the reproduction machine for copying

document feed means associated with said document tray adapted to feed documents from the top or the bottom of the document stack depending upon whether one or both sides of the documents are to be copied.

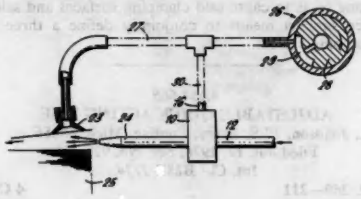
4,184,672

CONTROL MEANS FOR THE SUPPLY OF OPERATING MEDIUMS AND SHEET FEEDING MACHINES HAVING THE SAME

Harry J. Watkins, Alresford, and Christopher C. Storey, Westcliff-on-Sea, both of England, assignors to H.T.B. Limited, Essex, England

Filed Oct. 4, 1977, Ser. No. 839,202
Claims priority, application United Kingdom, Oct. 5, 1976, 41358/76
Int. Cl.² B65H *3/08*
U.S. Cl. 271—105 **8 Claims**

1. A sheet feeding machine having pneumatic sheet-handling suckers connectable to a vacuum source, means connectable to a compressed air supply for creating air blasts adjacent the edges of the uppermost sheets of a stack of sheets in order to act on the sheets, and means for controlling the vacuum and compressed air operating mediums whereby each operating medium may perform its respective primary function and one of the operating mediums may perform an additional secondary function, the control means comprising at least one main valve for controlling said one operating medium, which main valve has a first connection to a point downstream of the main valve at which said one operating medium performs its primary function and at least one second connection leading from the main valve to a respective subsidiary valve for controlling the other operating medium, which subsidiary valve is biased into one of its open and closed states and whose state is reversed by the flow of said one operating medium through the main valve and the respective second connection, said one operating medium thereby performing its secondary function.

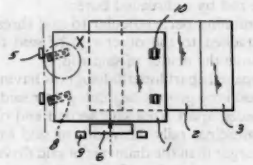


4,184,673

METHOD OF AND AN APPARATUS FOR ALIGNING SHEETS ADVANCING IN AN OVERLAPPING ARRAY TO A PRINTING MACHINE

Günter Weisbach, Radebeul, German Democratic Rep., assignor to VEB Polygraph Leipzig Kombinat für Polygraphische Maschinen und Ausrüstungen, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 788,774, Apr. 19, 1977, abandoned. This application May 5, 1977, Ser. No. 793,952
Claims priority, application German Democratic Rep., Apr. 19, 1976, 192412; Feb. 21, 1977, 197455
Int. Cl.² B65H *9/00*
U.S. Cl. 271—237 **23 Claims**



1. An apparatus for aligning individual sheets of an elongated array of such sheets which advances longitudinally thereof over an in-feed table to a printing machine and in which each succeeding sheet partially overlaps the preceding sheet, comprising means for displacing a respective sheet of the array substantially in a plane of the latter by a distance having at least a component in a direction transverse to the elongation of the array to thereby expose a lateral marginal portion of the respective sheet; means for aligning the respective sheet at a front edge thereof; means for engaging the exposed marginal portion of the frontwardly aligned sheet and for applying thereto a force which shifts the frontwardly aligned sheet substantially in said plane by a further distance only in said direction into an aligned position of a lateral edge delimiting the exposed lateral marginal portion of the respective sheet; and means for releasing the frontwardly and laterally aligned sheet for further advancement to the printing machine, said displacing means including at least one belt arranged under-

neath the in-feed table and having an outer surface adapted to contact a lower major surface of the respective sheet, and means for moving said belt.

4,184,674

MONITORING DEVICE FOR MISSING AND SKEWED SHEETS IN SHEET FEEDS

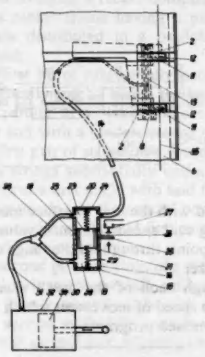
Arno Wirz, and Willi Becker, both of Bammental, Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 342,959, Mar. 20, 1973, abandoned. This application Feb. 4, 1975, Ser. No. 547,045

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1972, 2214720

Int. Cl.² B65H 7/08

U.S. Cl. 271—260 **7 Claims**



1. Monitoring device for missing and skewed sheets in sheet feeding devices of printing machines, comprising feed grippers for transporting a sheet across the top of a feed table from a first location to a second location, oscillating lever means carrying said gripper means, said oscillating lever means being located below the feed table, and at least two spaced sensor means provided on said feed grippers, said sensor means having air outlet means which are disposed to be covered by a transported sheet when the latter is properly aligned, conduit means connecting said sensor means on each of said feed grippers, valve means being in said conduit means, said valve means comprising a cylinder, a piston operable within said cylinder, said piston dividing said cylinder into two chambers and being acted upon from two sides by pressure within the chambers on either side of the piston, spring means normally maintaining said piston in a centrally disposed position, said cylinder having an opening, said piston having a switching pin extending through said opening, a switch activated by said switching pin when said piston is displaced from its normally disposed central position when one of said chambers is vented through said conduit means leading to said sensor means.

4,184,675

MECHANICAL ARM WRESTLER

Brent Rogerson, R.D. #1, Box 47, Lake Lynn, Pa. 15451

Continuation of Ser. No. 732,840, Oct. 18, 1976, abandoned. This application Sep. 28, 1977, Ser. No. 837,337

Int. Cl.² A63B 21/00

U.S. Cl. 272—67 **14 Claims**

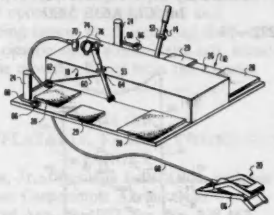
5. A mechanical arm wrestler mechanism comprising in combination:

(a) a means for supplying compressed air which is under preselected pressure;

(b) a fluid cylinder connected to said means for supplying compressed air, said cylinder having a piston and a rod carried by said piston and extending from one end of said cylinder;

(c) a crank arm connected to said rod;

(d) means for releasably engaging said crank arm through an arm engaging member in a ready condition while the cylinder is being pressurized by said means for supplying compressed air;



(e) whereby said compressed air in said cylinder exerts a continuous force against the means for releasably engaging prior to release of said arm and after release thereof said force acts continuously against the arm of a wrestler against which a user applies a counter force during an arm exercise program.

4,184,676

ELECTRONIC TIC-TACK-TOE GAME

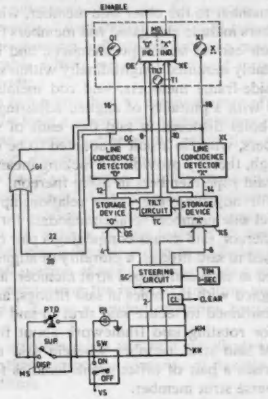
Benjamin J. Barish, 103 Ahad Ham'am St., Tel Aviv, Israel

Filed Dec. 13, 1977, Ser. No. 860,177

Claims priority, application Israel, Nov. 7, 1977, 53316

Int. Cl.² A63F 3/00

U.S. Cl. 273—237 **9 Claims**



1. An electrical device for playing the game Tick-Tack-Toe, comprising: a keyboard including a plurality of manipulatable keyboard elements for inputting an "O" or "X" indication in each position of a 3-by-3 rectangular matrix; optical display means including a matrix display capable of displaying an "O" and an "X" indication in each matrix position; and an electrical circuit including means controlled by said keyboard elements for displaying cumulatively the "O" and "X" indications inputted during a game sequence in the matrix positions inputted, means for detecting when a complete horizontal, vertical, or diagonal line of "O" or "X" indications have been inputted, and suppressing means effective to suppress the display in said matrix display of the cumulative indications inputted during a

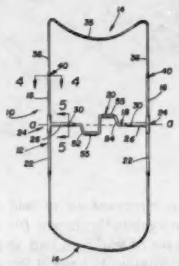
game sequence until the inputting of a complete line of "O" or "X" indications has been detected.

4,184,677

LENGTH AND WIDTH-ADJUSTABLE JUMP-ROPE-EXERCISING APPARATUS

James E. Murray, 1700 S. 4th St., Alhambra, Calif. 91803

Filed May 24, 1978, Ser. No. 908,966
Int. Cl.[2] A63B *5/20*
U.S. Cl. 272—74 **1 Claim**



1. A jump-rope-exercising apparatus comprising:

a framework including a pair of parallel, spaced-apart, side-frame members having oppositely disposed free ends;

a transverse strut member adjustably interconnecting each side-frame member, said strut member disposed intermediate the free ends of said side-frame members, thereby providing a substantially "H"-shaped-framework configuration, wherein each said side-frame member includes a "T"-shaped fitting adapted to receive a respective of said transverse strut member therein;

a pair of flexible rope members connected across from one side member to the other side member, wherein said rope members include elongated rod members fixedly attached to each end of said rope members, and arranged to be adjustably mounted longitudinally within said free ends of said side-frame members, said rod members being provided with a plurality of aligned adjusting holes to align with holes disposed in said free ends of said side-frame members, wherein a bolt is adapted to be received therethrough, thereby providing a locking means to adjustably lock said rope members in place thereon;

means for adjusting the space relationship between said parallel side members to accommodate for the size of the user thereof, said means comprising a pair of aligned holes disposed in said fittings, a plurality of aligning holes being formed in each end of said strut member, and arranged to be aligned with the holes in said fittings, and a bolt and a nut positioned to secure said strut to said fittings; and

means for rotating said framework about the longitudinal axis of said strut member wherein said rotating means comprises a pair of offset crank handles formed on said transverse strut member.

4,184,678

PROGRAMMABLE ACCELERATION EXERCISER

Evan R. Flavell, Albany, Calif., and James E. Counsilman, Bloomington, Ind., assignors to Isokinetics, Inc., Albany, Calif.

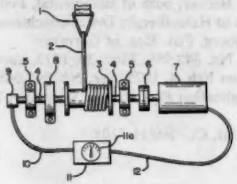
Filed Jun. 21, 1977, Ser. No. 808,729
Int. Cl.[2] A63B *21/24*
U.S. Cl. 272—129 **58 Claims**

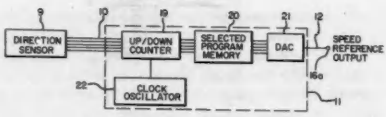
1. A totally speed programmable exercise device comprising:

a user interface means for accepting user input exercising movement;

speed regulation means connected to the user interface means for substantially limiting the speed of user movement to a variable speed reference value; and

program means, including a predetermined program for controlling the speed regulation means throughout an entire exercise stroke and addressing means for accessing locations on said predetermined program for establishing a series of many points within the exercise stroke, operably associated with the user interface means for automatically varying said speed reference value at any point of the series of points throughout the range of motion of each exercise stroke;





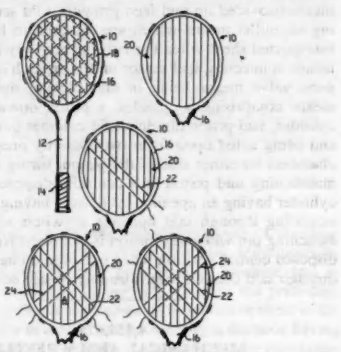
whereby through each of the user's exercise strokes, he experiences a speed of movement which varies according to a predetermined program.

4,184,679

GAME RACKET AND METHOD OF MAKING SAME

Madeline H. Mishel, 126 E. 79th St., New York, N.Y. 10021

Continuation of Ser. No. 718,875, Aug. 30, 1976, abandoned.
This application Mar. 8, 1978, Ser. No. 884,481
Int. Cl.[2] A63B *51/08*
U.S. Cl. 273—73 D **14 Claims**



1. An improved racket of the type comprising a handle having an open head at one end, wherein the improvement comprises:

(a) a first set of substantially parallel strings substantially uniformly spaced across said head which strings are substantially parallel to the longitudinal axis of said handle;

(b) a second set of substantially parallel strings substantially uniformly spaced across said head which strings form a first angle with said first set of strings; and

(c) a third set of substantially parallel strings substantially

uniformly spaced across said head which form a second angle with said second set of strings, said second angle being substantially twice said first angle, said third set of strings forming an angle substantially equal to said first angle with said first set of strings, each of said strings in said second set underlying each of said strings in said third set and each of said strings in said first set underlying each of said strings in second set and overlying each of said strings in said third set, the strings in said first set intersecting the strings in said second set substantially midway between adjacent pair of strings in said third set, the strings in said second set intersecting the strings in said third set substantially midway between adjacent pair of strings in said first set and the strings in said first set intersecting the strings in said third set substantially midway between adjacent pair of strings in said second set.

12. A method of stringing a racket comprising the steps of:

(a) providing a racket frame having a plurality of string support means distributed in a predetermined pattern around its head;

(b) stringing a first set of substantially parallel strings substantially uniformly spaced across the head in a direction substantially parallel to the longitudinal axis of the handle of the racket and with a predetermined tension;

(c) stringing a first pair of strings of a second set of substantially parallel strings substantially uniformly spaced in a direction to form a first angle with said first set, said first pair of strings starting in the central portion of the head and overlying said first set, said first pair of strings being held in a predetermined tension;

(d) stringing a second pair of strings of a third set of substantially parallel strings substantially uniformly spaced in a direction to form a second angle with said first pair of strings, said second angle being substantially twice said first angle, said second pair of strings forming an angle substantially equal to and opposite to said first angle with said first set, said second pair of strings starting in the central portion of the head and underlying the strings of said first set and overlying said first pair of strings, said second pair of strings being held in a predetermined tension;

(e) alternating stringing said first and second pairs of strings until the head is completely strung; and

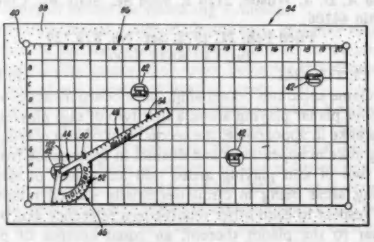
(f) said predetermined pattern and said stringing steps being chosen so that the strings of each set intersect substantially midway between adjacent pairs of parallel strings of the remaining sets of strings and each string is substantially straight.

4,184,680

ARTILLERY GAME AND PLAYING METHOD

Walter T. Gage, 1600 Stubbeman St., Norman, Okla. 73069

Filed Jun. 21, 1978, Ser. No. 917,514
Int. Cl.[2] A63B *65/12*
U.S. Cl. 273—101 **15 Claims**



1. An artillery game, comprising:

a playing board, having disposed thereon grid indicia so that the location of a target upon said playing board may be identified by reference to said grid indicia;

a plotting chart, having disposed thereon a scale reproduction of said grid indicia of said playing board;

a movable target, for placement upon said playing board;

a projectile firing cannon, for mounting upon said playing board, pivotable about both horizontal and vertical axes;

a direction and range finding means, constructed for pivotal attachment upon said plotting chart; and

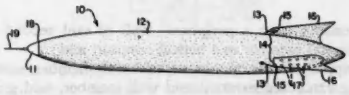
elevation finding means, for determining the proper orientation of the cannon about a horizontal axis, based upon the range of the movable target from the cannon.

4,184,681

RAM-AIR INFLATABLE, FABRIC, TOWED GUNNERY TARGET

John J. Graham, Jr., Cuyahoga Falls, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Aug. 29, 1977, Ser. No. 828,462
Int. Cl.[2] F41J *9/10*
U.S. Cl. 273—105.3 **5 Claims**



1. An apparatus for aerial target practice, comprising:

a ram-air exclusively aft-inflatable, fabric, towed gunnery target capable of air deployment or snatch deployment;

said target having a rigid nose cone assembly and a flexible, inflatable, fabric envelope;

said nose cone and said envelope attached by securing means for assembling said target;

said nose cone assembly containing rigid material from its apex to its outermost perimeter for forming a frontal-closed, streamlined fore structure for said target;

said nose cone assembly containing securing means for attaching a cable which serves to tow said target from a tractor aircraft;

said envelope being attached to the perimeter of said nose cone so as to form a continuous surface when inflated;

said nose cone assembly containing protective means for housing bullet detection devices;

said envelope having a tapered, aft portion, said tapered, aft portion containing inflation inlets for inflating said ram-air exclusively aft-inflatable fabric towed gunnery target attached to the surface of said tapered aft portion, said inflation inlets being the sole means for inflating the target;

said tapered aft portion of said envelope having stabilization means for maintaining the inflated structure and position of said target during a towing operation by said tractor aircraft; and

wherein said inflation inlets and said stabilization means at said aft portion comprise a plurality of flexible, inflatable finlet stabilizers.

4,184,682

GAME PROJECTILE

James Collins, 7710 Watson St., Philadelphia, Pa. 19111, and Joseph Gerstenbacher, 2435 46th St., Pennsauken, N.J. 08110

Filed Dec. 30, 1977, Ser. No. 865,929
Int. Cl.[2] A63B *65/00*
U.S. Cl. 273—106 B **8 Claims**

1. A game projectile adapted to be manually thrown, comprising:

(a) a first hemispherically contoured member, said first hemispherical member being hollow defining a continuous resilient wall member having an inner surface and an outer surface, said first hemispherical member substantially symmetrical about a first vertical directed axis line, said

first hemispherically contoured member having an internal radius within an approximate range between 1.0-1.5 inches, said first hemispherical member including at least one groove formed in said wall member within said outer surface, said groove for providing a plurality of trajectory paths to be imparted to said game projectile, said groove

extending from a peripheral wall of said second hemispherical member in a helical contour; and,

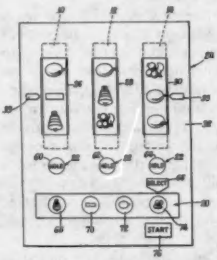
(b) gripping means coupled to said wall member, said gripping extending external said wall member, said gripping means including a second hemispherically contoured member, said second hemispherical member being substantially hollow.

4,184,683

SLOT MACHINE APPARATUS

Donald E. Hooker, Wilmette, Ill., assignor to Bally Manufacturing Corp., Chicago, Ill.

Filed May 22, 1978, Ser. No. 908,081
Int. Cl.[2] A63F *5/04*
U.S. Cl. 273—143 R **5 Claims**



1. In an amusement apparatus having a plurality of rotating drums, each bearing a plurality of types of symbols and including means for rotating said drums and means for arresting said drums to display various combinations of types of symbols, first means associated with said arresting means of one of said drums for permitting a player to choose, in advance of the drum rotation, any one of the types of symbols to be displayed when the drum stops.

4,184,684

CARD GAME BOARD APPARATUS

Lyle L. Cramer, 2060 E. Boatfield, Burton, Mich. 48529

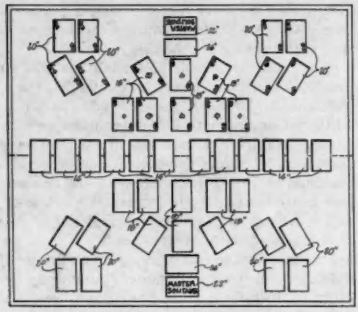
Filed Nov. 10, 1977, Ser. No. 850,393
Int. Cl.[2] A63F *1/10*
U.S. Cl. 273—148 A **11 Claims**

1. A game apparatus used in conjunction with four conventional decks of playing cards and in which two persons compete against each other, said apparatus comprising:

a substantially rectangular playing surface,

means for defining a row of twelve first card placement positions linearly spaced along a longitudinal centerline of said playing surface upon which cards are accumulated face up in consecutively ascending numerical order but consecutively alternating color,

means for defining eight second card placement positions on each side of said centerline, transversely adjacent to but spaced apart from said row of first card placement positions, upon which Ace cards are first laid face up and upon which cards of the same suit as the Ace first laid are subsequently accumulated face up in consecutively ascending numerical order,



means for defining four third card placement positions at each corner of said playing surface upon which King cards are first laid face up and upon which cards are subsequently accumulated face up in consecutively descending numerical order and consecutively alternating color,

means for defining two fourth card placement positions located laterally on each side of said centerline and substantially midway and closely adjacent the longitudinal edges of said playing surface wherein cards dealt to each player are stacked face down, and

means for defining two fifth card placement positions, adjacent to but spaced laterally inwardly from said fourth card placement positions wherein cards not playable on any of said first, second or third card placement positions are laid face up on said fifth position until playable.

4,184,685

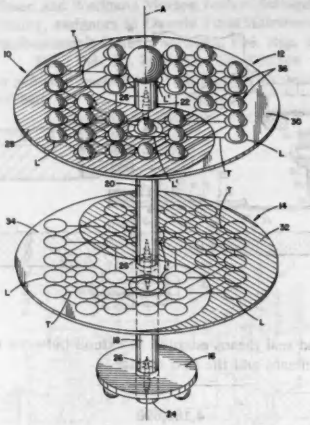
THREE-DIMENSIONAL GAME APPARATUS

David A. D. J. Wilson, 2126 E. 93rd St., Suite #6, Cleveland, Ohio 44106

Filed Feb. 21, 1978, Ser. No. 879,729
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—241 **10 Claims**

1. Game apparatus comprising, game board means providing just four planar playing areas, a first two of said playing areas being alike in appearance, the second two of said playing areas being alike in appearance and distinct in appearance from said first two of said playing areas, said alike ones of said four playing areas being in circumferentially spaced relationship with respect to each other relative to a reference axis perpendicular to the planes thereof, an equal number of playing spaces in each of said four playing areas, and first and second sets of game pieces each of a total number corresponding to the number of playing spaces in one of said four playing areas, said

four playing areas providing the only playing spaces for said game pieces on said game board means, and said alike playing



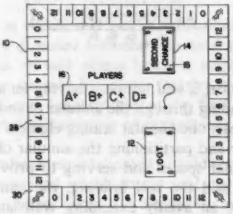
areas being in planes axially spaced apart with respect to said reference axis.

4,184,686

GAME OF MENTAL ADDITION USING A DIE AND A GAME BOARD

Joselito R. de la Merced, 34861 B Aquaris, Sterling Heights, Mich. 48077

Filed Dec. 15, 1977, Ser. No. 860,714
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—274 **2 Claims**



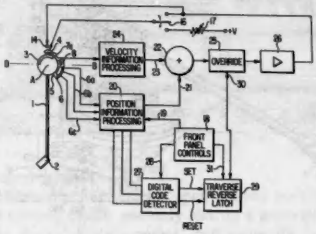
1. Apparatus for playing a board type game, comprising,
a playing board,
a plurality of means for indicating a number,
a card denominated a second chance card, and play money,
wherein the surface of said board has outlined on it a plurality of playing spaces, each space being for the placement of one of said number indicating means, and
wherein the surface of said board has outlined on it a playing space for the placement of said second chance card, and
wherein the surface of said board has outlined on it a playing space for containing an amount of said paper money, and
wherein the surface of said board has outlined on it a continuous strip of playing spaces along each side of said board for the placement of an amount of play money, each space being marked with a different number, said number indicating a possible sum of the numbers indicated by each of said number indicating means.

4,184,687

ELECTRICAL CONTROL SYSTEM FOR THE MOVEMENT OF THE PICKUP ARM OF A DISC-RECORD PLAYER

John P. Wren, Swindon, and Ian W. Buckner, Lea, near Malmesbury, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Apr. 26, 1978, Ser. No. 900,145
Claims priority, application United Kingdom, Apr. 28, 1977, 17708/77
Int. Cl.[2] G11B *17/06*
U.S. Cl. 274—13 R **2 Claims**

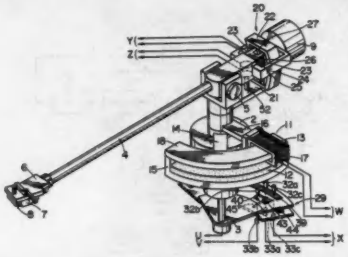


1. Electrical equipment for producing and controlling, in a disc-record-player having a record turntable and a pickup member for co-operation with a record disc placed on the turntable, horizontal movement of the pickup member towards and away of the axis of the turntable and up-and-down movement of the pickup member, said equipment comprising: a variable-speed electric motor means which, when connected to a source of electric power, produces such horizontal movement of the pick-up member in one or the other of two opposite directions, according to the manner of its connection to such source; a motor-energisation circuit for establishing such connection of said motor to the power source; position-detector means, controlled by the position of the pick-up member resulting from such horizontal movement and operative to respectively produce at each of a plurality of such positions an electric output signal indicative of the respective arm position; position-selector means operative when set for a selected one of said positions of the pick-up member, to complete the motor-energisation circuit for causing said motor means to produce horizontal movement of the pick-up member towards the selected position, and a speed-reference signal of normally constant magnitude, said position-selector means being so associated with said detector means that the output signal of the detector means will produce de-energisation of the motor-energisation circuit when said pick-up member is in said selected position, motor-speed detector means producing a speed signal varying in accordance with the speed of the motor means; motor-speed control means differentially responsive to said motor-speed signal and said speed reference signal and operative to control the motor speed and thus the velocity of the horizontal movement of the pick-up member produced by the motor means, said position-detector means being of the kind which when the pick-up member, in its approach to a selected position, has arrived within a pre-determined distance range from that position, causes said speed reference signal to decrease and thus reduce said velocity in accordance with the decreasing distance from the selected position so that the position-detector means form, with the motor means and the velocity detector means, an approach servo; and electrically operated arm-lifting means operative to ensure that the pick-up member member is in a raised position while the motor means is energised from such source to produce such horizontal movement, and to allow the pick-up member to be deposited on to a record resting on the turntable, or to other support means, when such horizontal movement has been stopped at such selected position.

4,184,688
TONE ARM ASSEMBLY

Yoshimoto Omura, Mitaka; Hideo Hara, Yokohama; Isao Kawashima, Chiba; Keisuke Sekiguchi, Yokohama, and Kuninori Shino, Higashi-murayama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 10, 1978, Ser. No. 923,455
Claims priority, application Japan, Jul. 11, 1977, 52-83661
Int. Cl.[2] G11B 17/06
U.S. Cl. 274—15 R 18 Claims



1. A tone arm assembly comprising a tone arm having a stylus at one end thereof, mounting means mounting said tone arm for vertical and horizontal movements in respect to a turntable, first motor means mechanically coupled to said tone arm for moving said tone arm in the vertical direction with respect to a record disc on the turntable, second motor means mechanically coupled to said tone arm for moving said tone arm in the horizontal direction with respect to said record disc, a first motor drive circuit for supplying an energizing current to said first motor means so as to move said tone arm between an inoperative up-position and a reproducing position on said record disc, a second motor drive circuit for supplying an energizing current to said second motor means in such a manner that said tone arm is moved between an inoperative rest position and said up-position above said reproducing position on said record disc, and brake circuit means for supplying to said second motor means a braking current, having a sense opposite to that of the energizing current supplied to said second motor means so as to brake the latter while said second motor means is energized by said second motor drive circuit.

4,184,689
SEAL STRUCTURE FOR AN AXIAL FLOW ROTARY MACHINE

Robert F. Brodell, Brattleboro, Vt.; Robert A. Johnson, Glastonbury, and Trent H. Holmes, Rocky Hill, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 2, 1978, Ser. No. 948,290
Int. Cl.[2] F01D 25/26; F16J 15/54
U.S. Cl. 277—26 5 Claims

1. A seal structure of the type disposed between a nonrotating first component having a first surface and a nonrotating second component having a second surface to block the flow of a medium therebetween, which comprises:

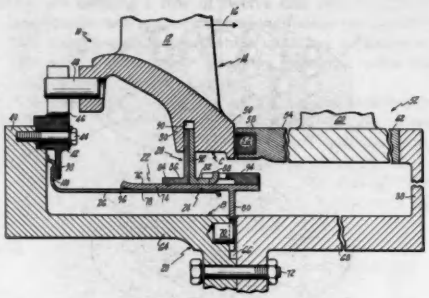
a support means adapted for mounting between the first and second components wherein the support means has

a first portion adapted to extend parallel to the first surface, and

a second portion adapted to slidably engage the first component both to support the support means in a direction essentially normal to the first surface and to enable relative movement between the support means and the first surface in a direction essentially normal to the first surface;

a first seal means adapted to extend between the support means and the second component, and having

a first end which slidably engages the support means and a second end adapted to slidably engage, in a direction normal to said engagement at the first end, the second component, and

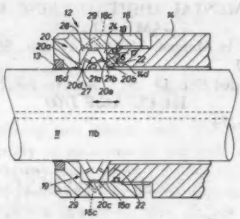


a second seal means adapted to extend between the support means and the first surface.

4,184,690
ANNULAR ELEMENTS

John E. Brown, Mansfield Woodhouse, England, assignor to West & Son (Engineers) Limited, England

Filed Jan. 25, 1978, Ser. No. 872,174
Claims priority, application United Kingdom, Jan. 25, 1977, 2924/77; May 27, 1977, 22627/77; Nov. 5, 1977, 46121/77
Int. Cl.[2] F16J 15/18
U.S. Cl. 277—102 5 Claims



1. In combination, a seal housing, having an annular chamber, a shaft extending through the annular chamber of the seal housing and at least one annular sealing element located in the annular chamber and partitioning the annular chamber into a plurality of annular spaces and serving to provide a seal between the shaft and the seal housing, the annular chamber being defined by an axially extending wall surface radially spaced from the shaft and axially spaced abutment surfaces, a first of said abutment surfaces being located on the air side of the seal element and the second of said abutment surfaces located on the fluid side of the seal element, the abutment surfaces being movable relative to one another to axially compress the seal element, the sealing element having a wall portion protruding in opposite axial directions and being provided with an inner peripheral surface for sealing engagement with the shaft and an outer peripheral surface for abutment against the axially extending wall surface of the chamber, the wall portion having a marginal side surface portion adjacent to and extending about the inner peripheral surface and which sealingly abuts against the first abutment surface, the wall portion being made of a rigid material, and fluid passages being provided in the wall portion, seal housing and/or the shaft for providing fluid communication within the housing between said annular spaces to equalize fluid pressure either side of the wall portion.

4,184,691

WORKPIECE HOLDER FOR A VERTICAL BROACHING MACHINE FOR BROACHING ANNULAR WORKPIECES

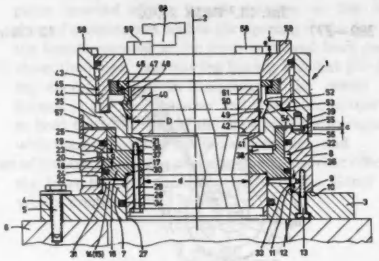
Gustav Esser, and Wolfgang Marten, both of Solingen, Fed. Rep. of Germany, assignors to Oswald ForstMaschinenfabrik und Apparatebauanstalt GmbH, Solingen, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 880,168

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 2707648

Int. Cl.[2] B23B *31/20, 31/36*

U.S. Cl. 279—5 6 Claims



1. A workpiece holder for a vertical broaching machine for broaching annular workpieces in a sequence of steps without removing the workpiece from the holder, the holder comprising:

a baseplate having serrations on one surface thereof;

a workpiece support means, rotatably disposed relative to said baseplate, for axial location of the workpiece;

a piston, nonrotatably connected to said workpiece support means, and having serrations, complementary to the serrations on said baseplate, on one surface thereof facing the surface of said baseplate on which are the serrations thereof;

a cylinder in which said piston is rotatably and axially displaceably disposed between two axial end positions, the serrations on said piston being in engagement with the serrations on said baseplate, thereby holding said piston centered and nonrotatable, at the first end position and said serrations being out of engagement at the second end position;

a first chamber means delimited by said serrations for receiving pressure oil which forces said piston to the second position thereof when it is desired for said serration to be out of engagement;

a second chamber means formed between said piston and said cylinder for receiving pressure oil which forces said piston to the first position thereof when it is desired for said serration to be in engagement; and

tensioning means for radial location and centering of the workpiece within said workpiece support means, and wherein said tensioning means includes a tensioning ring screwed into said support means from above, and a tensioning sleeve, connected to said tensioning ring, abutting the outer surface of the workpiece at the inner tightening surface of said sleeve and abutting a frustoconically tapering surface of said workpiece support means at the outside surface of said sleeve, whereby screwing of said tensioning ring into said workpiece support means causes said tensioning sleeve to firmly connect the workpiece to said workpiece support means in a centered position with respect thereto.

4,184,692

MOTOR QUICK-CHANGE CHUCK SYSTEM FOR TOOL HAVING CYLINDRICALLY SHAPED ADAPTER PORTION

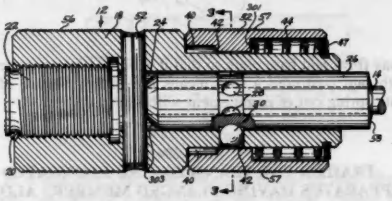
Richard L. Benson, Mercer Island; Horace E. Hill, Renton, and Mark S. Soderberg, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 799,406, May 23, 1977, abandoned.

This application Aug. 8, 1978, Ser. No. 932,593

Int. Cl.[2] B23B *31/22*

U.S. Cl. 279—75 1 Claim



1. In combination:

a tool having cylindrically shaped adapter portion;

a tool-holding chuck assembly having a generally cylindrically shaped body member, said generally cylindrically shaped body member having a hollow first end portion, said hollow first end portion having an inner wall surface threaded to accept the mating threaded spindle of a portable motor, said generally cylindrically shaped body member having a hollow second end portion concentrically disposed relative to said hollow first end portion for receiving said cylindrically shaped adapter portion in slip fit relationship therewith, said generally cylindrically shaped body member including a roll pin depth stop disposed between said hollow first end portion and said hollow second end portion for limiting the depth of engagement of said received cylindrically shaped adapter portion;

said cylindrically shaped tool adapter portion including an array consisting of six spherically shaped dimples circumferentially disposed in the outer surface of said cylindrically shaped adapter portion;

said tool-holding chuck assembly including three cylindrically shaped ball elements, a collar member (32) having an internal shoulder (301), a recess (40) formed in the inner wall surface thereof, a retaining ring (47), a spirally wound spring member (44) disposed between said retaining ring (47) and said internal shoulder (301), said collar member (32), retaining ring (47), and spirally wound spring member (44) coaxially disposed about the central axis of said tool-holding chuck assembly, said collar member (32) adapted to be moved axially for compressing spirally wound spring member (44) between said retaining ring (47) and said internal shoulder (301) thereby positioning said recess (40) for receiving said three cylindrically shaped ball elements to provide release of said cylindrically shaped adapter portion of said tool from said tool holding chuck assembly.

4,184,693

TRUCK FOR A SKATEBOARD

Denis H. Whitmarsh, Carpenders Park, England, assignor to Lexique Limited, Harrow, England

Filed May 8, 1978, Ser. No. 903,739

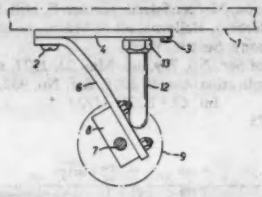
Claims priority, application United Kingdom, Nov. 9, 1977, 46654/77

Int. Cl.[2] A63C *17/02*

U.S. Cl. 280—11.28 11 Claims

1. A truck for a skateboard deck, comprising a base plate for securing to the underside of said deck, a spring member joined to said base plate at a first location by one end and carrying a wheel axle near an opposite end, said spring member compris-

ing a plate spring, a post depending from said base plate at a second spaced from said first location, said spring member being pre-stressed by its said axle-carrying end being flexed



away from said base plate so that it is biassed into engagement with said post, and a stop means preventing flexure of said plate spring out of engagement with said post.

4,184,694

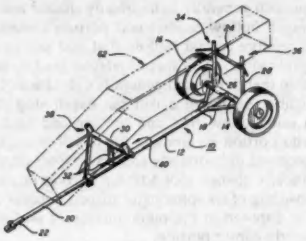
TRAILER FOR TRANSPORTING ELONGATED APPARATUS HAVING FLANGED MEMBERS ALONG EACH SIDE

John R. Porter, Waterloo, N.Y., assignor to Porter-Way Harvester Mfg. Co. Inc., Waterloo, N.Y.

Filed Apr. 19, 1978, Ser. No. 897,669

Int. Cl.[2] B60P 7/08

U.S. Cl. 410—44 **7 Claims**



1. A trailer for transporting elongated apparatus having flanges of predetermined thickness extending outwardly along both lower, longitudinal sides, the lateral distance between the outer edges of the flanges likewise being a predetermined dimension, said trailer comprising:

(a) rigid frame means including a tongue for attachment to a towing vehicle;

(b) at least one pair of wheels supporting said frame and mounted thereon for rotation about a transverse axis;

(c) first and second apparatus support members affixed to said frame means, extending laterally thereof with upper surfaces parallel to said transverse axis and spaced from one another longitudinally along said frame means;

(d) first and second pairs of upstanding post members rigidly affixed to said first and second support members respectively, to extend along axes perpendicular thereof, the members of each pair being laterally spaced from one another by slightly more than said predetermined dimension;

(e) a hollow, tubular member mounted upon each of said post members for selective rotation about the respective axes thereof;

(f) a fixed lug extending outwardly from each of said tubular members, each of said fixed lugs having a lower surface movable in a plane parallel to said support member upper surfaces and spaced therefrom by substantially said predetermined thickness of said flanges;

(g) the lugs on the tubular members on each of said pairs of post members being spaced along said plane by less than said predetermined dimension with said tubular members in a rotational position such that said lugs face toward one another; and

(h) handle means extending fixedly from each of said tubular members for effecting manual rotation thereof.

4,184,695

MOTORCYCLE FRONT FORK ASSEMBLY

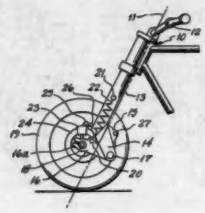
Geoffrey E. Roe, and Terrance E. Thorpe, both of Stockport, England, assignors to Victoria University of Manchester, Manchester, England

Filed May 30, 1978, Ser. No. 910,426

Claims priority, application United Kingdom, Jun. 4, 1977, 23836/77

Int. Cl.[2] B62K 21/02

U.S. Cl. 280—277 **12 Claims**



1. A motorcycle front fork assembly including a pair of substantially parallel fork legs extending downwardly from a steering head and each having a minimum flexural rigidity of 10.8×10^6 pounds inches squared; a pair of rotational bearings each at the base of each leg having negligible radial clearance and each rotational bearing carrying a forwardly extending suspension link thus pivotally mounted with respect to its associated leg, each suspension link having a minimum flexural rigidity of 3.8×10^6 pounds inches squared; a wheel spindle rigidly clamped by and extending between the free ends of the suspension links and having a minimum flexural rigidity of 1.9×10^6 pounds inches squared; and resilient suspension means extending between each fork leg and the associated suspension link, all whereby the overall lateral stiffness of the fork assembly amounts to at least 1000 pounds per inch.

4,184,696

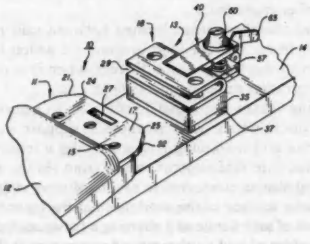
SAFETY BINDING FOR TOURING SKIS

Richard J. Settembre, 714 Velasko Rd., Syracuse, N.Y. 13207

Filed Jul. 17, 1978, Ser. No. 925,096

Int. Cl.[2] A63C 9/08

U.S. Cl. 280—615 **11 Claims**



1. A safety binding for use in conjunction with a touring ski including

a toe piece having means for securing the toe piece to a boot and containing a horizontal planar male member being adapted to extend forwardly from said boot, the male

member having a vertical front wall at its distal end and an elongated transversely extended detent groove formed in the top surface thereof,

a ski piece including means to secure the ski piece to the top surface of a ski,

a female member for slidably receiving the male member therein that is formed of a top wall and a bottom wall that are spaced apart a set distance to provide a close running with the male member, the top wall having an opening formed therein, and a rear wall cojoining the top and bottom walls and being adapted to engage the front wall of the male member substantially along its length,

a lever having a centrally located hinge affixed to the ski piece forward of the female member so that one leg thereof reciprocates within the opening in the top wall of the female member as the lever is moved back and forth about the hinge, said one leg having a detent pin depending therefrom which compliments the detent groove formed in the male member and is adapted to seat therein to hold the front wall of the male member in engagement with the rear wall of the female member, and

an adjustable tensioning means acting against the other leg of the lever to force the detent pin into the detent groove with a predetermined force.

4,184,697

FRONT WHEEL SUPPORTING DEVICE FOR A MOTOR VEHICLE

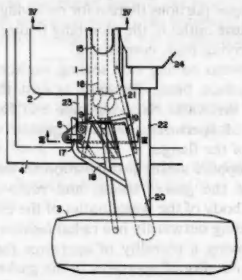
Ichiro Suzuki, Nagoya; Kazuo Kitamura, Chiryu; Nobuo Wakimoto, and Hiroyuki Watanabe, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki-Kaisha, Toyota, Japan

Filed Dec. 19, 1977, Ser. No. 861,578

Claims priority, application Japan, Aug. 29, 1977, 52/116259[U]

Int. Cl.[2] B60K *5/00*

U.S. Cl. 280—660 **16 Claims**



7. A front wheel supporting device for a motor vehicle having an engine comprising:

a laterally elongated suspension bracket of substantially U shape cross section provided on an undersurface of a fo,·vard portion of said motor vehicle with the opening of the U directed downwardly;

lower arms;

lower arms bracket provided within the front wheels of said motor vehicles for supporting the lower arms;

lower arm bracket supports provided on said suspension bracket;

engine mount bracket integrally installed on the suspension bracket at an upper and outer surfaces of said suspension bracket for coupling to and supporting said engine and in the vicinity of the opposite ends of said suspension bracket so as to reinforce said lower arm bracket; and

a stabilizer, at a portion adjacent an outer ends of the motor vehicle in a cross-wise direction relative to said motor vehicle, said stabilizer being supported by said engine mount bracket.

4,184,698

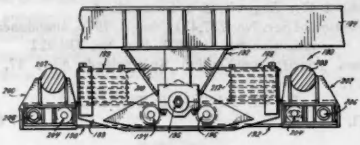
MOUNTING STRUCTURE FOR VEHICLE SUSPENSIONS

John E. Raidel, Rte. 9, Box 400-M, Springfield, Mo. 65804

Filed Mar. 16, 1978, Ser. No. 887,209

Int. Cl.[2] B60G *19/02, 15/00, 5/04*

U.S. Cl. 280—686 **10 Claims**



10. In a multiple axle suspension assembly, at least three members operatively connected to the vehicle chassis for pivotal movement relative thereto, and means mounting an axle of said vehicle to each of said members said improvement comprising a mounting structure for adjustably pivotally mounting first and second members together and for adjustably distributing the load between said axles, said mounting structure comprising at least one pin extending through aligned openings in said first and second members being larger in dimension in the generally horizontal transverse direction of the pin than the dimension of said pin in that same transverse direction at a location adjacent said larger openings, means releasably locking said pin against transverse movement within said larger openings and at a selected position within said larger openings, the pin having an eccentric shank portion operatively engaging one of said first and second members for adjustably moving one of said first and second members relative to the other in said transverse direction at transverse locations of said pin within said larger openings upon rotation of said eccentric shank when the pin is unlocked, said suspension assembly further comprising a shackle assembly, said shackle assembly having a first bushing assembly for pivotally mounting one of said first and second members thereto and a second bushing assembly for pivotally mounting a third member thereto.

4,184,699

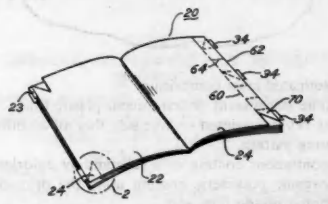
INTEGRAL PAGE AND TAB

Henry E. Lowe, Jr., River Glen Plz., 348 S. Columbia St., South Bend, Ind. 46601

Filed Sep. 15, 1978, Ser. No. 942,486

Int. Cl.[2] B42F *21/02*

U.S. Cl. 281—41 **14 Claims**



1. Integral page and tab for magazines, trade journals, catalogs, books and other publications, comprising a page having lines identifying a pretab configuration, including a first severance line spaced from and substantially parallel with one edge of said page for partially separating the tab structure from the page, and a fold line on which said partially separated tab

structure is folded extending diagonally from said severance line to said one edge of the page, said fold line having an included angle with respect to said severance line so that when said partially separated tab structure is folded on said fold line a portion of said separated tab structure projects outwardly from said one edge of the page to form a completed tab.

4,184,700

DOCUMENTS EMBOSSED WITH OPTICAL MARKINGS REPRESENTING GENUINENESS INFORMATION

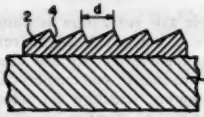
David L. Greenaway, Oberwil, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Continuation of Ser. No. 737,431, Nov. 1, 1976, abandoned. This application Sep. 1, 1978, Ser. No. 938,922

Claims priority, application Switzerland, Nov. 17, 1975, 14846/75

Int. Cl.[2] B32B *3/30*; B42D *15/00*

U.S. Cl. 283—6 7 Claims



1. A document comprising a flat support member of paper or cardboard at least partly coated with a thermoplastic coating, in which coating are embossed optical markings having a relief structure with a line spacing in the range of 0.5 to 100 microns, said markings representing information indicating the genuineness of the document, said markings being machinereadable by means of the light diffraction or refraction caused by the relief structure, and further comprising a thin metallic coating covering said optical markings.

4,184,701

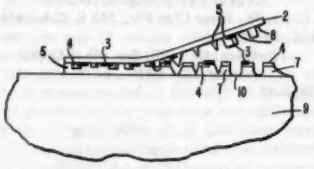
TAMPER PROOF LABEL

Priscilla S. Franklin, and Frederick L. Jones, both of Dayton, Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Feb. 10, 1978, Ser. No. 876,761

Int. Cl.[2] B42D *15/00*

U.S. Cl. 283—9 R 5 Claims



1. A laminated label comprising:

(a) a flexible transparent or translucent plastic film,

(b) having reverse printed on one side thereof an information containing pattern,

(c) a discontinuous coating of a substantialy colorless plasticized organic polymeric coating upon the printed side of said printed plastic film, and

(d) a colored layer of pressure sensitive adhesive bonded to said printed and coated side of said film, said layer contacting said printed pattern, said coating, and said film,

(e) the plasticizer in said polymeric coating being selected such that it is a plasticizer for both said coating and said adhesive, with said plasticizer being present in an amount sufficient to migrate from said coating to affect the bond strength of at least portions of said adhesive layer adjacent said discontinuous coating,

(f) said adhesive being an adhesive which will adhere more strongly to an object upon which the label will be mounted than to an internal laminate bond in register with the discontinuous plasticized polymeric coating,

(g) so that when the laminated label has been mounted upon said object, attempted removal will cause delamination so that at least a tamper indicating amount of the colored adhesive layer remains adhered on the object in the areas opposed to areas where the adhesive layer contacts the discontinuous plasticized coating.

4,184,702

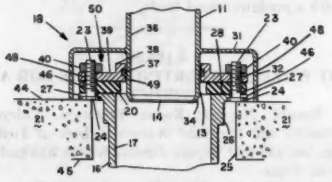
WASTE DRAIN COUPLING FOR PLUMBING FIXTURES

Earl L. Morris, Whittier, Calif., assignor to Acorn Engineering Co., Industry, Calif.

Filed Jun. 8, 1978, Ser. No. 913,652

Int. Cl.[2] F16L *35/00*

U.S. Cl. 285—39 8 Claims



1. An improved apparatus for securing, in fluid-sealing relationship, the waste outlet of a plumbing fixture to a waste receiving pipe extending through and beyond a mounting structure, such as a wall or a floor, the waste receiving pipe having a radially-extending flange about one end thereof with a plurality of open portions therein for receiving headed fasteners, and the waste outlet of the plumbing fixture extending into the waste receiving pipe, comprising:

(a) gasket means having two sealing surfaces thereon, one sealing surface being disposed against the face of the flange of the waste receiving pipe and further having a plurality of apertures therein alignable with the open portions of the flange;

(b) gasket support means juxtaposition to the other sealing surface of the gasket means and removably arranged about the body of the waste outlet of the plumbing fixture and extending outwardly in a radial fashion therefrom and further having a plurality of apertures therein alignable with the plurality of apertures in the gasket means;

(c) fluid sealing means removably secured to the gasket support means and disposed between the gasket support means and the body of the waste outlet of the plumbing fixture and operably arranged in fluid sealing relationship therebetween, the fluid sealing means further permitting, movement between the gasket support means and the body of the waste outlet of the plumbing fixture;

(d) headed fastening means for securing the flange of the waste receiving pipe to the gasket support means;

(e) fluid sealing adjustment means for moving the gasket support means towards and allowing movement away from the gasket means to effectuate the selection of a fluid sealing relationship and no fluid sealing relationship between the gasket support means, the gasket, and the flange of the waste receiving pipe; and

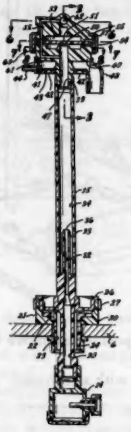
(f) means for surrounding the gasket means, the gasket support means, the headed fastening means and the fluid sealing adjustment means to prevent unauthorized adjustment thereof.

4,184,703

ACOUSTIC MOUNTING FOR VALVE ASSEMBLY

Sol R. Rubin, Beverly Hills, and Raymond D. Gates, Huntington Beach, both of Calif., assignors to Masco Corporation, Taylor, Mich.

Continuation-in-part of Ser. No. 799,502, May 23, 1977, Pat. No. 4,136,711. This application Aug. 21, 1978, Ser. No. 935,466
Int. Cl.[2] F16L *3/04, 5/00*
U.S. Cl. 285—49 8 Claims



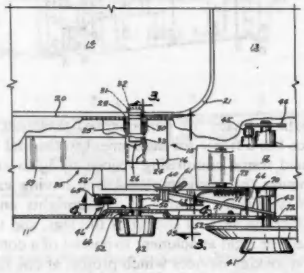
1. An assembly including a tank, a liquid inlet pipe passing through an opening in the wall of the tank, sound deadening mounting means for the inlet pipe including in combination, a flexible bushing positioned at the said opening in the wall of the tank, securement means whereby a part of the bushing is clamped to the wall of the tank, the bushing having a peripheral part spaced from the securement means, a mounting ring carried by the said peripheral part of the bushing, and means whereby the inlet pipe is carried by the mounting ring the inlet pipe being free from contact with the securement means.

4,184,704

ACCESS DOOR LOCK SYSTEM

Frank E. Ross, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 14, 1977, Ser. No. 860,436
Int. Cl.[2] E05C *3/10, 13/10*
U.S. Cl. 292—201 12 Claims



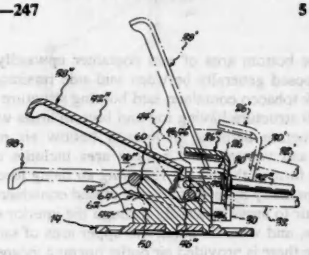
1. An access door lock system for an apparatus including cabinet means having an access door movable between an open position and a closed position, the combination comprising: strike means on one of said access door and cabinet means; latch means on the other of said access door and cabinet means and being normally engageable with said strike means for locking said access door in said closed position; latch actuating means including a portion movable from a door-locked first posture to a door-unlocked second posture for effecting disengagement of said latch means from said strike means to permit opening of said access door; manually operable means for making and breaking an electrical circuit including switch means operable between an apparatus-deenergizing first condition and an apparatus-energizing second condition; and connecting means mechanically interconnecting said latch actuating means with said circuit making and breaking means and operable for blocking movement of said latch actuating means from said door-locked first posture when said switch means is in said apparatus-energizing second condition, whereby said access door may be opened only when said switch means is in said apparatus-deenergizing first condition and said latch actuating means has been moved to said door-unlocked second posture.

4,184,705

HOOD LATCH

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,133
Int. Cl.[2] E05C *5/04*
U.S. Cl. 292—247 5 Claims



1. In a latch of the type employing the over-center latching principal and comprising a keeper having a latch recess and a latch assembly having resiliently deformable tension means connected by a hinge pin to an operating handle carrying a pivot member, said pivot member being releasably seated for bearing engagement within an end of said latching recess for latching purposes by bias established by said tension means incident to over-central travel of said hinge pin relative to said pivot member into a latched position, the improvement comprising in combination:

means cooperating with said hinge pin for providing an auxiliary latch releasably constraining said hinge pin from travel over-center away from said latched position.

4,184,706

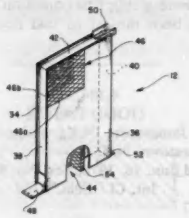
BULK TOBACCO CONTAINER AND AIR DIFFUSER THEREFOR

Roy Z. Simmons, Greenville, N.C., assignor to Harrington Manufacturing Company, Lewiston, N.C.

Filed Aug. 17, 1978, Ser. No. 934,428
Int. Cl.[2] A24B *1/08*
U.S. Cl. 294—5.5 10 Claims

1. In a container type bulk tobacco curing and drying structure which when filled and oriented in a normal curing and drying position is adapted to contain and support a continuous volume of tobacco leaf material where the vertical depth of the continuous volume of tobacco leaf material is greater than one leaf length and wherein this type of bulk tobacco container includes two laterally spaced side retaining means, a back retaining means extending across the back portion of said

container, a front retaining means extending across the front of said container, tine means inserted through said container and the tobacco leaf material contained therein and between said front and back retaining means for supporting the tobacco leaf material within said container, and at least partial open top and bottom areas for allowing air to be forced vertically through said container and the mass of tobacco leaf material contained therein during the curing and drying process, the improvement comprising an air directing device disposed within said container type bulk tobacco curing and drying structure for directing air from the bottom of said container to the tobacco material located generally within the central area of said container, said air directing device comprising an upright housing structure disposed within said bulk tobacco container and extending



from the bottom area of said container upwardly therefrom and disposed generally between said side retaining means of said bulk tobacco container, said housing structure including a side wall structure having top and bottom areas with the side wall structure defining an interior hollow air passing area therein and wherein said bottom area includes an air inlet opening formed therein for receiving air being forced into the at least partially open bottom area of said container and allowing the air to move upwardly through the interior of said wall structure, and wherein about the upper area of said side wall structure there is provided air outlet opening means that allow the air passing within the interior of said side wall structure to exit therefrom and to move through the tobacco material disposed about the generally central area of said container.

4,184,707

BALL RETRIEVING AND STORAGE BAG

Ned H. Nelson, 9829 NE. 5th, Bellevue, Wash. 98004, and Marvin L. Behar, 316 Main St., Edmonds, Wash. 98020

Filed Apr. 28, 1978, Ser. No. 900,887

Int. Cl.[2] A63B *57/00*

U.S. Cl. 294—19 A **15 Claims**

1. An apparatus for retrieving and storing a ball, said apparatus comprising:

a. a base comprising a frame;

b. said frame comprising a first tube and a second tube;

c. said first tube and said second tube being spaced apart;

d. a first slot in said first tube;

e. a second slot in said second tube;

f. a first resilient means in said first tube;

g. a second resilient means in said second tube;

h. a member in said frame;

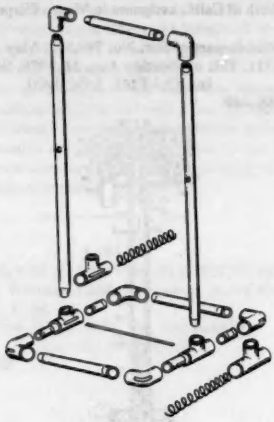
i. said member having a first end in said first slot in said first tube and, operatively, connecting with said first resilient means;

j. said member having a second end in said second slot in said second tube and, operatively, connecting with said second resilient means;

k. said member being moveably positioned in said frame;

l. the dimension between said frame and said members, normally being less than the diameter of a ball to prevent the ball being pulled through said base by gravity;

m. said frame may be positioned over said ball and then forced over said ball so as to move said member in said frame to allow said ball to move between said member and said frame and into said apparatus;



n. an enclosing means positioned above said frame and for storing said ball; and,

o. a handle connecting with said frame.

4,184,708

HANDLING APPARATUS FOR GOODS TRANSPORT CONTAINERS

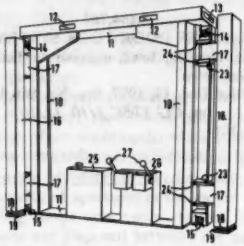
David Allen, Kettering, and Robert J. Rowley, Thorney, both of England, assignors to Modular Distribution Systems Limited, Peterborough, England

Filed May 26, 1976, Ser. No. 690,301

Claims priority, application United Kingdom, May 27, 1975, 23098/75; Nov. 7, 1975, 46181/75; Feb. 12, 1976, 5589/76

Int. Cl.[2] B66C *1/00*

U.S. Cl. 294—67 R **30 Claims**



1. A handling device for containerised transport systems, which device has a frame for attachment to the end wall of a container, said frame comprising spaced uprights and cross-members joining the uprights, the frame having extendable legs slidable vertically relative to the uprights and power means to effect the vertical sliding of the legs, and the frame being adapted for rigid attachment to an end of a container by means of first locking devices which project at one face of the frame adjacent the upper ends of its side uprights, the first locking devices being adapted for locking engagement with upper ISO castings or the like fittings of the container, and by means of second locking devices which also project at said face of the frame for locking engagement with bottom ISO castings or the like of the container, and the frame also having sockets

for receiving prongs of a fork-lift machine, which sockets open in a direction facing away from the opposite face of the frame.

4,184,709

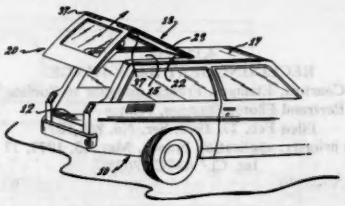
HATCHBACK STATION WAGON WITH ADJUSTABLE ROOF PANEL

Sunyong P. Kim, 535 N. Cahuenga Blvd., Los Angeles, Calif. 90004

Filed Jun. 19, 1978, Ser. No. 916,954

Int. Cl.[2] B60P *3/00*

U.S. Cl. 296—137 B **7 Claims**



1. In a hatchback station wagon having a rear cargo space, a hatchback door and a roof,

said roof provided with a rectangular opening on the rear half portion thereof,

a roof panel normally covering said rectangular opening and hinged on the front thereof to the roof,

said hatchback door hinged at its top to the rear of said roof panel, and

means for engaging or disengaging the rear of the roof panel to the rear sides of said rectangular opening,

whereby when the rear of said roof panel is engaged said hatchback door can be swung upwardly on the hinge on the rear of the roof panel in a normal fashion to gain access to said cargo space, and

whereby when the rear of said roof panel is disengaged said roof panel can be swung upwardly on the hinge on the front thereof and folded back against the front portion of the roof while the hatchback door can be swung downwardly on the hinge on the rear of said roof panel and folded back against the roof panel to thereby provide a vertical clearance opening above said cargo space.

4,184,710

CARRIER SHOE FOR A VEHICLE'S SLIDABLE ROOF

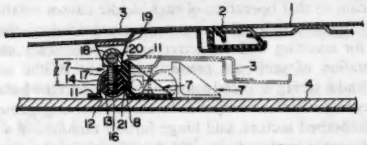
Keizi Mori, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 27, 1978, Ser. No. 955,215

Claims priority, application Japan, Oct. 29, 1977, 52-145269[U]

Int. Cl.[2] B60J *7/04*

U.S. Cl. 296—137 E **3 Claims**



1. Carrier shoe means for a vehicle's slidable roof comprising shoes carrying a slidable roof, at front and rear portions thereof, adapted to close and oen an opening in a vehicle's roof and engaging longitudinal extending rails disposed on the inside of said vehicle's roof at opposite sides of said opening, a member rotatable about generally vertical and horizontal axes, received in a space provided in said shoe, and a link member pivotably connected about a horizontal axis at one end with said slidable roof and at the other end screwed into said rotatable member, the rotation of said rotatable member about a vertical axis allowing said link member to be screwed in a vertical direction thereby adjusting the position of said slidable roof relative to the vehicle's roof.

4,184,711

FOLDING CANVAS CHAIR

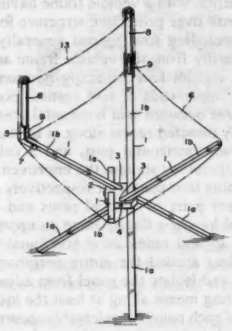
Yasuo Wakimoto, No. 3-6, Nishiasakusa 1-chome, Taito-ku, Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,712

Claims priority, application Japan, Oct. 14, 1977, 52/136750[U]

Int. Cl.[2] A47C *4/00*

U.S. Cl. 297—16 **1 Claim**

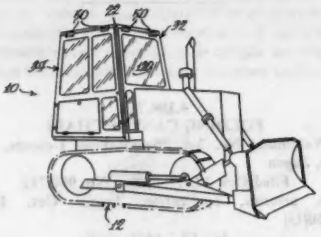


1. A canvas chair which is constructed to be readily capable of folding and unfolding as well as provided with four rods **1** for setting up a framework of a chair, the lower half portion of said rod **1** being serviceable as a supporting leg while the upper half portion of said rod **1** being used as a supporting post for a canvas back sheet to be spread over between said two supporting posts, and said rod **1** being inserted through an aperture **3** perforated on a basic framework plate **2** to be pivotally secured to said basic framework plate at a predetermined spot located in the center part of each rod **1**, said folding canvas chair characterized in comprising metal connecting members **5** of a L-shape in profile having a forked portion formed at the lower end thereof, said forked portion being pivotally connected with the upper end at both sides of said rod **1** disposed at the right and left sides in the rear of a seat **6**, while said forked portion at the upper end thereof being securely fixed to the lower end of said supporting post **8** having a desired length so as to swing said supporting post upward and downward, a strip-like leaf spring having a necessary length provided on the front surface adjacent to the lower end of each of said supporting posts, said leaf spring being fitted securely to said supporting post **8** at the upper end thereof and having a curved hook portion **10** formed on the lower extension thereof to pass through a slot **11** perforated on the upper end portion of said rod **1** so as to protrude from the lower side of said rod **1** as well as to be in contact with a flange of said slot **11** formed on the upper end portion thereof, and a canvas back sheet **13** being spread over between said two supporting posts **8** which are located on both sides of the seat **6** to be inserted into both hemmed edges of said back sheet **13**.

4,184,712
ENCLOSURE MECHANISM FOR ROLL OVER PROTECTIVE STRUCTURE

Richard J. Skahill, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed May 16, 1978, Ser. No. 906,693
Int. Cl.[2] B62D 27/00
U.S. Cl. 296—190 13 Claims

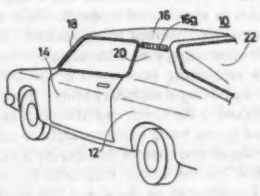


1. In combination with a vehicle frame having an operator's station with a roll over protective structure for protecting an operator and including four spaced generally vertical posts extending upwardly from the vehicle frame and surrounding said operator's station, four generally horizontal posts interconnecting the upper ends of said vertical posts with a roof enclosing the area between said horizontal posts, means defining an upwardly directed recess along at least a portion of the periphery of each horizontal post, and a cab structure for enclosing said operator's station, the improvement of said cab structure including four panels for respectively enclosing areas between adjacent pairs of vertical posts and one horizontal post, each panel having a flange along an upper edge adapted to be received in said recess of a horizontal post, a sealing element extending around the entire periphery of the panel adapted to seal and isolate the panel from adjacent posts, and releasable retaining means along at least the lower portions of vertical edges of each panel for releasably securing the panel to a pair of vertical posts so that each panel can readily be attached and removed from said roll over bar protective structure.

4,184,713
VEHICLE BODY CONSTRUCTION WITH UNSIGHTLY PART CONCEALING COVER

Takayasu Matsui, Tokorozawa, and Satoshi Temino, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Aug. 3, 1977, Ser. No. 821,571
Claims priority, application Japan, Aug. 11, 1976, 51/96384
Int. Cl.[2] B60J 1/20
U.S. Cl. 296—137 R 19 Claims



1. A vehicle body construction comprising:

a roof panel having a step to form a recessed portion extending substantially across a rear end region of said roof panel;

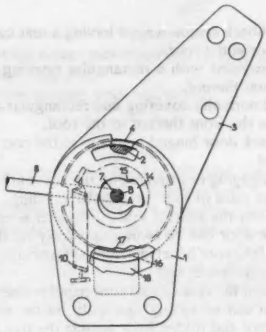
a rear pillar having an exteriorly exposed surface to which a laterally extending end of said recessed portion of said roof panel is connected; and

a cover straddling over said recessed portion as well as said exteriorly exposed surface to conceal a portion where said laterally extending end is connected to said exteriorly exposed surface, said cover being bent at its front edge portion toward said recessed portion of said roof panel to form a laterally extending channel portion between said step and said front edge portion of said cover.

4,184,714
RECLINING SEAT BACK HINGE

Bernard Courtois, Etampes, France, assignor to Societe Industrielle Bertrand Faure, Etampes, France

Filed Feb. 27, 1978, Ser. No. 881,607
Claims priority, application France, Mar. 15, 1977, 77 07657
Int. Cl.[2] A47C 1/025
U.S. Cl. 297—370 9 Claims



1. A seat hinge for connecting, in an angularly adjustable fashion about a transverse horizontal axis, the back of a seat to the sitting portion of the seat, said hinge comprising: a first flange integral with the sitting portion and carrying a first toothed sector centered on a transverse horizontal axis A; a second flange integral with the seat back and carrying a second toothed sector centered on an axis B connected with the seat back and extending parallel to axis A, said second sector being engageable with and disengageable from the first sector in response to movement of the two axes A and B towards and away from coincidence, said second flange being provided with an opening therethrough centered on axis B; a hub housed in said opening integral with a rotary cam; a control handle accessible, in use, to a person seated on the seat and connected to the cam so that operation of said handle causes rotation of the cam about axis B; a bearing surface provided on the first flange for coacting with an active area of the rotary cam so that rotation of said cam causes movement of the second flange; and a spring angularly urging the cam and the handle in the direction which corresponds to the mutual engagement of the two toothed sectors, said hinge further comprising a third toothed sector centered on axis A and carried by the first flange so as to be diametrically opposed to the first sector and to face generally in the same direction as this first sector; and a fourth toothed sector centered on axis B and carried by the second flange so as to be diametrically opposed to the second sector (4) and generally to face in the same direction as said second sector, said fourth sector being engageable with and disengageable from said third sector in response to movement of the two axes A and B towards and away from coincidence.

4,184,715

RACK DEVICE FOR A DRUM CUTTER MINING MACHINE

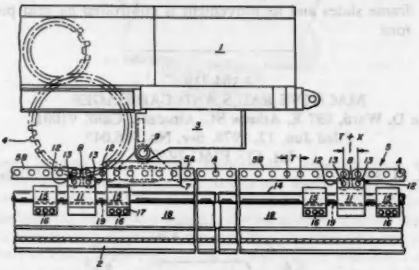
Willy Lanfermann, Bochum, Fed. Rep. of Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Feb. 27, 1978, Ser. No. 882,304

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2709153

Int. Cl.[2] E29C *29/22*

U.S. Cl. 299—43 16 Claims



1. In combination with a mining machine, a rack device at the side wall of a face converyor which includes a plurality of conveyor pan sections joined together end-to-end for extending along the path of travel by the mining machine at the working face of an underground mine, said face conveyor further including side bracket portions for extending along the stow side of the mining machine, said mining machine including gear drive means to drivingly engage the rack device which includes the combination of:

a plurality of elongated rack segments each having rack gear teeth at spaced intervals along the extended length thereof, at least some of said rack segments bridging the joints between conveyor pan sections or side bracket portions, and

rack mounting means slideably carrying said rock segments for support by said conveyor pan sections or said side bracket portions, said rack mounting means including holders to support said rack segments, connector means including means to pivotally interconnect adjacent ends of adjoined rack segments with a holder in an end-to-end relation for guiding and limiting longitudinal sliding movement by the rack segments to maintain adequate spacing of gear teeth at the gap between joined rack segments for driving engagement with said drive gear means.

4,184,716

CONTROL VALVE ASSEMBLY FOR HYDRAULIC BRAKES

Hiroyuki Kondo, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 13, 1978, Ser. No. 915,269

Claims priority, application Japan, Jun. 20, 1977, 52-73035

Int. Cl.[2] B60T *8/26*

U.S. Cl. 303—6 C 6 Claims

1. A hydraulic pressure control valve assembly for vehicles having dual hydraulic brake systems, comprising:

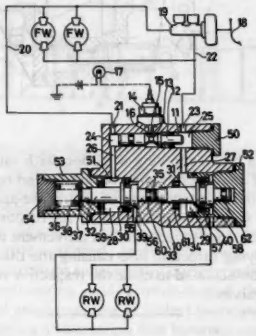
(a) a valve assembly body having first inlet and outlet ports for a first hydraulic brake pressure supply line and second inlet and outlet ports for a second hydraulic brake pressure supply line;

(b) a first hydraulic chamber within said body in fluid-flow communication with said first inlet and outlet ports;

(c) a second hydraulic chamber within said body in fluid-flow communication with said second inlet and outlet ports, said first and second chambers being coaxial;

(d) first and second proportioning valve assemblies within said first and second hydraulic chambers, respectively, said proportioning valve assemblies comprising:

(1) first and second pistons slidably located in and coaxial with said first and second chambers, respectively, each said piston having an annular step in its surface, said first piston having a centrally-located, longitudinal, cylindrical bore and said second piston including an elongated stem extending from one end thereof coaxial with the first piston, said stem being slidably located in the bore of said first piston, the end of said stem remote from said second piston and the end of the first piston remote from said second piston being coterminus;



(2) first and second annular valve seats mounted on the inside surface of said first and second chambers, respectively, between said inlet and outlet ports, each valve seat having a central opening coaxial with a respective piston; and

(3) first and second valve members secured to said first and second pistons, respectively, and aligned with the opening of said respective valve seats such that seating said valve members on said valve seats prevents fluid flow through said respective outlet ports, hydraulic pressure acting on said annular steps tending to seat said valve members; and

(e) a single spring means for biasing both said pistons of said proportioning valve assemblies in one direction and tending to unseat said valve members from said valve seats in said proportioning valve assemblies.

4,184,717

CONTROL VALVE ASSEMBLIES FOR HYDRAULIC BRAKING SYSTEMS

Hugh G. Margetts, Leamington Spa, England, assignor to Girling Limited, Birmingham, England

Filed May 25, 1978, Ser. No. 909,473

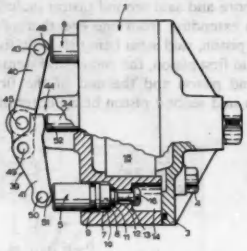
Claims priority, application United Kingdom, May 25, 1977, 21957/77

Int. Cl.[2] B60T *15/04*

U.S. Cl. 303—52 5 Claims

1. A control valve assembly for a vehicle dual hydraulic braking system comprising a housing provided with a distributor chamber, and first and second outlets for connection to brakes on wheels on opposite sides of the vehicle, valve means for controlling pressurisation of said chamber, first and second brake-applying valves for controlling communication between said distributor chamber and a respective one of said outlets, and a lever mechanism, said lever mechanism comprising a first lever, a second lever, a first pivot pivotally connecting said first and second levers to each other, each of said levers having an abutment face which is movable in one direction

with respect to a respective one of said brake-applying valves to urge the said one valve into a closed position and movable in a second opposite direction with respect to the said one valve to permit the said one valve to move into a fully open position, a second pivot pivotally connecting one of said levers to a fixed point on said housing, and an operating face on the other of said levers acting on said valve means to pressurise said distributor chamber when at least one of said levers is



moved in a brake-applying direction with said abutment face on the said one lever moving in said second opposite direction to permit the respective one of said brake-applying valves to move into said fully-open position, the reaction forces on said pivots in response to independent movement of said levers in a brake-applying direction also causing the other of said levers which is non-actuated to close the respective one of said brake-applying valves.

4,184,718

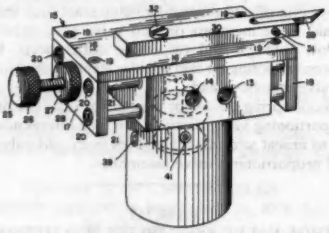
TOOL SLIDE APPARATUS

Lester G. Banach, 10515 Hillcrest Dr., Palos Park, Ill. 60464

Filed May 12, 1978, Ser. No. 905,431

Int. Cl.[2] F16C *29/04*

U.S. Cl. 308—3 A **11 Claims**



1. A slide apparatus for feeding an element in one direction in a straight line at a controlled rate for a predetermined distance comprising, in combination:

(a) a base having top, side, bottom and opposing end outer surfaces,

(b) a tubular piston bore adapted to receive a piston in each of said opposing ends of said base of (a), said bores extending inwardly toward one another and terminating in closed inner ends within said base, one of said bores having a greater cross sectional area than the other,

(c) an actuating stroke sealed piston disposed for reciprocation within said larger bore of (b),

(d) a stroke control sealed piston disposed for reciprocation within said smaller bore of (b),

(e) means for controlling the movement of said pistons of (c) and (d), said means comprising bores in said base of (a) connected to said bores of (b) adjacent their closed inner ends whereby fluids can be introduced into and withdrawn from said piston bores to actuate and control said pistons of (c) and (d),

(f) a plurality of tubular passageways running axially from end to end of said base between the outer surfaces of said bores of (b) and the outer surfaces of said base,

(g) a frame comprising a top and opposing ends extending downwardly from said top, said frame adapted to carry said element, and

(h) rods rigidly connecting the ends of said frame of (g) so as to form a rigid frame structure, said rods each being slidingly mounted in said tubular passageways of (f) and the inner sides of said ends of said frame of (g) being operably contacted by said pistons of (c) and (d) whereby said frame slides and its movement is controlled by said pistons.

4,184,719

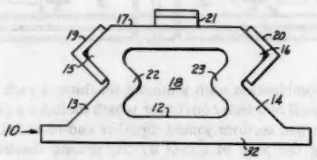
MACHINE RAILS AND CARRIAGES

John D. Ward, 997 E. Athens St., Altadena, Calif. 91001

Filed Jun. 12, 1978, Ser. No. 915,047

Int. Cl.[2] F16C *29/02*

U.S. Cl. 308—3 R **23 Claims**



1. A rail for a machine carriage, comprising in combination:

an elongate base plate;

a pair of spaced supporting walls extending along and rising obliquely from said base plate and converging toward each other in a direction away from said base plate;

first lateral carriage track means located on top of and extending along one of said supporting walls;

second lateral carriage track means located on top of and extending along the other of said supporting walls, and extending in parallel to said first track means; and

an elongate top plate extending between said first and second lateral carriage track means and being spaced from said base plate;

said base plate, pair of supporting walls, first and second track means and top plate being integral with each other and encompassing an elongate hollow space extending through said rail.

4,184,720

AIR-SUPPORTED BEARING FOR TURBINE ENGINES

Anton Zacherl, Münich, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union, Münich, Fed. Rep. of Germany

Filed Oct. 26, 1977, Ser. No. 845,789

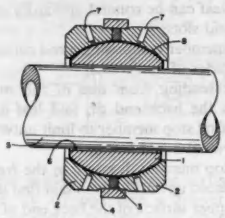
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1976, 2648328

Int. Cl.[2] F01D *25/16*; F16C *32/06*

U.S. Cl. 308—9 **2 Claims**

1. In a thermal turbine engine having a ceramic rotor, having a cylindrical shaft, adapted to rotate at high rotational speeds, a bearing comprising an air-supported bearing, said air-supported bearing including an outer bearing ring and an inner bearing ring, and a lubricating air film being maintained intermediate said bearing rings, the improvement comprising: said inner bearing ring including a convex spherical outer surface and said outer bearing ring including a concave inner spherical surface substantially complementary to and positioned adjacent said convex outer spherical surface with a spherical fluid

gap existing between the convex and concave surfaces, said inner bearing ring also including a cylindrical inner surface substantially complementary to and positioned adjacent to the outer cylindrical surface of said cylindrical shaft with a cylindrical gap existing therebetween, and the materials of said inner bearing ring and the shaft of said ceramic rotor being selected so that the cylindrical gap between said shaft and said



inner bearing ring remains substantially constant over the entire temperature range and rotational speed range of said turbine engine, and the diameters of said shaft and said inner bearing ring being dimensioned relative to each other so that a friction contact exists between said inner bearing ring and said shaft at lower rotational speeds of said engine whereas a dynamic lubricating air film is produced intermediate said shaft and said inner bearing ring at higher rotational speeds.

4,184,721

ROTATING DEVICE FOR SHAPES, ESPECIALLY FOR TURBOSETS

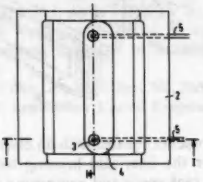
Rudolf Gemein, Nümbrecht, and Erich Pessel, Mülheim, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 2, 1978, Ser. No. 882,770

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2709047

Int. Cl.² F16C *17/00*

U.S. Cl. 308—9 **6 Claims**



1. Turning device for a shaft comprising a bearing for supporting the shaft, said bearing having a lower bearing shell formed, in vicinity of an oil-pressure feed, with at least one axially extending relief slot disposed asymmetrically to the center of said bearing and shifted in rotary direction of the shaft, and means for delivering pressure oil to said relief slot so as to break-away and turn the shaft.

4,184,722

BEARING BRASS FOR THE JOURNAL BEARINGS OF RAIL VEHICLES

Ernst Henniges, Hanover, Fed. Rep. of Germany, assignor to Gummi-Henniges, Hanover, Fed. Rep. of Germany

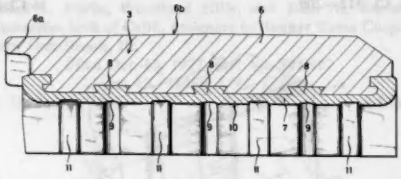
Filed Mar. 8, 1978, Ser. No. 884,584

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710590

Int. Cl.² F16C *33/08, 33/10*

U.S. Cl. 308—38 **4 Claims**

1. A bearing brass for the journal bearings of rail vehicles, said bearing brass formed of a part-circular segmental bearing member and arranged in a journal bearing box above an axle, said journal bearing box retaining underneath said axle a lubricating pad receiving lubricant from an oil sump, said lubricating pad serving to lubricate a rotating axle journal extending into said journal bearing box, said bearing brass comprising a tinned support body comprising cast iron having a plurality of dovetail-shaped grooves transverse to said axle journal and a bearing brass segment of babbitt metal having an external surface cast into said dovetail-shaped grooves and an internal surface bearing on said axle journal, groove-shaped depressions formed in said internal surface of said bearing brass segment below said dovetail-shaped grooves as a consequence of shrinkage of said babbitt metal in the region of said dovetail shaped grooves during cooling thereof, and additional grooves provided in said internal surface between each two neighboring groove-shaped depressions and in front of and behind and parallel to said groove-shaped depressions, said additional grooves having dimensions substantially corresponding to said groove-shaped depressions, said groove-shaped depressions and said additional grooves acting to collect lubricant, thereby enhancing formation a a lubricating film between said bearing brass segment and said axle journal.



4,184,723

ROTATABLE ROLLER ARRANGEMENT

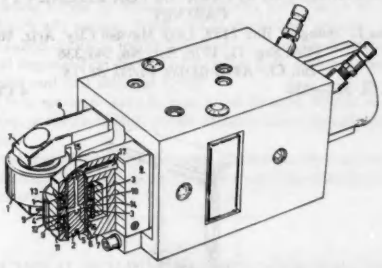
Kurt L. Danielsson, Smedjebacken, Sweden, assignor to Morgardshammar Aktiebolag, Smedjebacken, Sweden

Filed May 1, 1978, Ser. No. 901,831

Claims priority, application Sweden, May 13, 1977, 7705627

Int. Cl.² F16C *33/00, 25/00;* **B21B** *13/02*

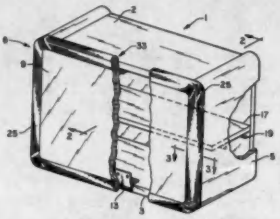
U.S. Cl. 308—190 **3 Claims**



1. Rotatable roller arrangement, comprising a fixed shaft, a pair of spaced fixed roller holders supporting the ends of the shaft, a rotatable roller having a cylindrical bore, said roller being rotatable on the shaft between the roller holders, an annular shoulder secured to the roller inside the bore between the ends of the roller, a bearing within the bore on each side of the shoulder, each bearing having an inner race slidable on the shaft and an outer race slidable on the interior of the bore, a pair of springs on opposite sides of the shoulder acting between the shoulder and the outer races of each bearing to urge said outer races away from the shoulder, and a bushing at each end

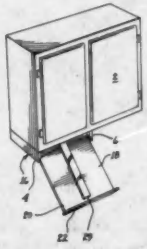
of the fixed shaft, each bushing comprising a cylindrical sleeve disposed between one end of the shaft and one of said roller holders and a radially outwardly extending flange at one end of the sleeve and disposed between a said inner race and the same said roller holder.

4,184,724
HOSPITAL FURNITURE
Hugh S. Katz, St. Louis, and Anthony N. Garrett, Clayton, both of Mo., assignors to LVK Associates, Inc., St. Louis, Mo.
Filed Feb. 23, 1978, Ser. No. 880,460
Int. Cl.[2] A47B *95/02*
U.S. Cl. 312—209 **16 Claims**



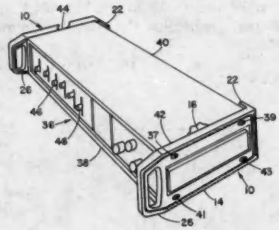
1. An article of hospital furniture having bottom, top and side walls, a closure for closing an opening at the front of the article, said closure being adapted to be pulled forwardly from a closed position in which it closes the opening to an open position, and closure comprising a front panel having secured to its periphery an elongate flexible gripping member which extends along edges of the panel and around corners of the panel and is of frictional material to facilitate pulling the closure open by exerting pressure on the member and pulling forwardly, said member being a solid bar member having a first side engageable with the periphery of the panel a second side opposite the firstside, and forward and rearward sides extending between the first and second sides and means for magnetically holding the panel in its closed position.

4,184,725
BOOK-HOLDING APPARATUS FOR KITCHEN TYPE CABINET
James L. Spangler, Box 2152, Lake Havasu City, Ariz. 86403
Filed Sep. 11, 1978, Ser. No. 941,336
Int. Cl.[2] A47B *63/00, 46/00, 88/18*
U.S. Cl. 312—233 **4 Claims**



1. Book-holding apparatus for use with a kitchen type cabinet comprising:
(a) a leaf having spaced upper and lower surfaces and front and back ends;
(b) means for retaining a book on the upper surface of said leaf;
(c) a box frame having at least two spaced sides having front and back ends;
(d) means for fastening said frame to a cabinet underside;
(e) guide means for slidably supporting and directing said leaf carried in said sides of said frame, comprising means defining a pair of cooperating slots in said sides adapted to slidably receive the edges of said leaf, said slots expanding upwardly at the front end of said sides, whereby the back end of said leaf can be rotated upwardly in the expanded portion of said slots;
(f) a first stop member comprising a rod carried by the front ends of the sides of said frame;
(g) a flange extending from one of the surfaces of, and spaced from the back end of, said leaf and adapted to engage said first stop member to limit outward movement of said leaf relative said frame;
(h) a second stop member disposed at the front end of said frame and spaced upwardly from said first stop member to engage the upper surface of the back end of said leaf when said leaf is withdrawn from said frame and said leaf pivots around said first stop member; whereby said leaf's pivotal motion is limited at a desired angle to receive and hold a book for convenient inspection.

4,184,726
REVERSIBLE MOUNTING BRACKET
Roger F. Cox, Northbrook, Ill., assignor to Norlin Industries, Inc., Lincolnwood, Ill.
Filed Apr. 21, 1978, Ser. No. 898,664
Int. Cl.[2] A47B *95/02*
U.S. Cl. 312—320 **6 Claims**



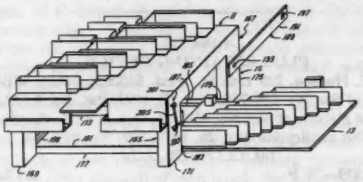
1. A reversible bracket for use with an electronic apparatus bearing housing or the like, said housing being suitable for mounting within a rack space and comprising a box-like structure having a front control panel, a spaced rear panel and a pair of transverse side panels, said bracket comprising:
an elongate plate having a peripheral configuration substantially coextensive with the peripheral configuration of said side panels and including means for enabling fastening of said plate to said side panels;
a mounting flange extending integrally from and transversely of one end of said plate and including means of enabling fastening of said flange within said rack space; and
handle means extending integrally from the other end of said plate, whereby said plate is fastenable to one of said side panels in a first orientation with said flange overlying a portion of said rear panel and said handle means projecting beyond said front panel facilitating portable transportation and use of said housing and in second orientation with said flange disposed in juxtaposition with said front panel and said handle means projecting beyond said rear panel facilitating mounting of said housing within said rack space.

4,184,727

DOCUMENT SORTER

Felix S. Guerra, 723 Alice Dr., Lafayette, La. 70503

Filed May 1, 1978, Ser. No. 901,707
Int. Cl.[2] A47B *88/20*; B42F *17/18*
U.S. Cl. 312—350 12 Claims



1. A device for facilitating document sorting comprising:

a housing having a frame with a drawer opening and a document accepting portion, said document accepting portion being disposed generally above said frame and being supported by said frame, said document accepting portion including a first series of slots for receving the documents and temporarily retaining the documents therein,

said first series of slots including a first slot, a last slot and a plurality of intermediate slots disposed between said first and last slot,

said slots of said first series of slots being parallel to one another and arranged successively one behind another,

said slots of said first series of slots being horizontally staggered with respect to one another, such staggering of each pair of slots being in the same direction moving from the first slot to the last slot; and

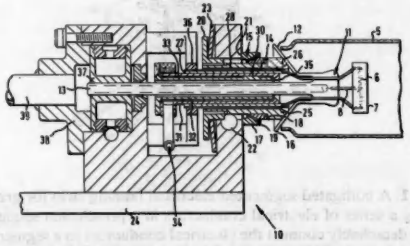
a drawer selectively positionable at a first position within said housing and beneath said document accepting portion of said housing and at a second position extending from said housing through said drawer opening, said drawer including a second series of slots for receiving the documents.

4,184,728

COAXIAL SEAL AND TIP OFF BURNERS

Julian P. Grenfell, Woking, and Stanley W. Stephens, Lightwater, both of England, assignors to Badalex Limited, Waybridge, England

Filed Dec. 29, 1977, Ser. No. 865,576
Claims priority, application United Kingdom, Jan. 24, 1977, 2689/77
Int. Cl.[2] H01J *9/34, 9/38*
U.S. Cl. 316—31 10 Claims



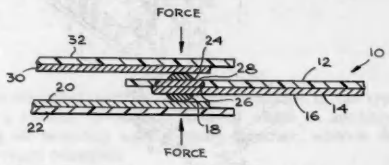
2. A head for electric light source making machines, said head comprising sealing burner means for fusing together a light source envelope and a mount assembly that includes an exhaust tube having a longitudinal axis and lead-in wires; support means for positioning the longitudinal axis of the exhaust tube carried thereby, said sealing burner means being disposed around the intended position of an exhaust tube longitudinal axis; tip-off burner means radially fixedly disposed within the sealing burner means and coaxially with the intended position of the longitudinal axis of the exhaust tube for tipping off the exhaust tube so that the lead-in wires of the mount assembly are disposed between the sealing burner means and the tip-off burner means, fluid flow duct means connectable between an external source of gaseous fluid or vacuum and the exhaust tube, and fuel supply means for supplying fuel to said sealing burner means and to said tip-off burner means.

4,184,729

FLEXIBLE CONNECTOR CABLE

Howard L. Parks, Woodland Hills, and John M. Kuronen, Camarillo, both of Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 13, 1977, Ser. No. 841,917
Int. Cl.[2] H05K *1/12, 3/36*
U.S. Cl. 339—17 F 8 Claims



1. An interconnection cable useful for electrically connecting to multiple points on a substantially-planar circuit board, said cable comprising:

a flat flexible laminar structure including first and second material layers bonded to one another;

said first material layer being formed of a flexible electrically-insulative material;

said second material layer being formed of a thin flexible layer of electrically-conductive material;

said second material layer including an electrically continuious ground plane portion and one or more circuit path portions each physically spaced and electrically isolated from said ground plane portion and from each other circuit path portion, said ground plane and circuit path portions being physically configured so that each circuit path portion forms an island substantially surrounded by but electrically isolated from said ground plane portion;

first raised contacts formed of electrically-conductive material deposited on each of said circuit path portions remote from said first material layer;

said first material layer having voids formed therein to expose portions of said second material layer therethrough; and

second raised contacts formed of electrically-conductive material deposited on said exposed portions of said second material layer.

4,184,730

ELECTRICAL BUILDING BLOCKS INCORPORATING AN ANGULAR ADAPTER AND A PROCESS TO MANUFACTURE THE SAME

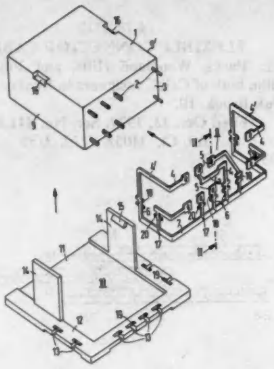
Wolfgang Huebner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,228
Claims priority, application Fed. Rep. of Germany, May 23, 1977, 2723201
Int. Cl.[2] H05K *1/10*
U.S. Cl. 339—17 LC 11 Claims

1. An electrical building block in combination with an angular adapter, comprising:

a housing for said building block and said housing including a first surface and second and third surfaces which are perpendicular to said first surface, a plurality of electrical contact pins extending from said first surface of said building block in a direction perpendicular to said first surface; and

said adapter including a carrier plate having a row of holes therein, a plurality of solder eyelets extending parallel to said first surface for receiving respective ones of said contact pins therein, and metal contact strips extending from respective solder eyelets and generally parallel to



said surfaces of said housing to be received in the holes of said carrier plate, including means on said strips for anchoring said strips to said carrier plate,

some of said metal contact strips extending parallel to said first surface, others of said metal contact strips extending parallel to said second surface and further ones of said metal contact strips extending parallel to said third surface, and

the holes in said carrier plate defining a U for receiving said some, said others and said further ones of said metal contact strips.

4,184,731

ELECTRICAL CONNECTOR FOR USE INSIDE A TUBE SUCH AS AN EJECTOR TUBE

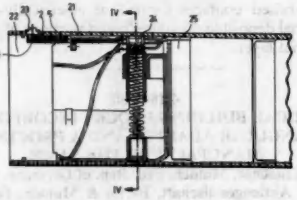
Helmut Betzmeir, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 3, 1978, Ser. No. 893,074

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1977, 7711455[U]

Int. Cl.² H01R *13/62*

U.S. Cl. 339—45 M **12 Claims**



1. An apparatus for establishing electrical connections, comprising a hollow tube, electrical connector means including insulator housing means, electrical contact means extending through said insulator housing means, recess means in said housing means, said electrical contact means including terminal means extending into said recess means, and pressure plate means separably fitting into said recess means inside said hollow tube, electrical conductor means including further terminal means, said pressure plate means pressing said further terminal means against respective ones of said first mentioned terminal means to make said electrical connections inside said hollow tube and to automatically separate said electrical connections when said electrical connector means are ejected from said hollow tube without shearing or breaking.

4,184,732

PLUG RETAINING DEVICE

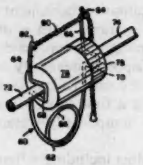
Gerald E. Hudson, 229 15th St. West, Billings, Mont. 59102

Division of Ser. No. 859,948, Dec. 12, 1977, Pat. No. 4,139,253, which is a division of Ser. No. 619,026, Oct. 2, 1975, abandoned.

This application Jun. 26, 1978, Ser. No. 919,243

Int. Cl.² H01R *13/54*

U.S. Cl. 339—75 P **2 Claims**



1. In a C-shaped, spring metal clamp for preventing disconnection of a plug from the socket of an extension cord, the legs of said clamp surrounding cords connected to said plug and socket and abutting the ends of said plug and socket, the improvement comprising releasable connecting means including a length of chain permanently secured to the end of one clamp leg and releasably secured to the end of the other clamp leg, and said releasable connecting means fastened between said legs adjacent the ends thereof for maintaining the distance between said legs substantially constant responsive to opposed forces exerted, respectively, on said plug and socket.

4,184,733

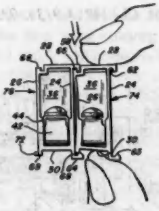
SEGMENTED FANNING STRIP

William H. Schmeling, Wauwatosa, Wis., assignor to Square D Company, Palatine, Ill.

Filed Jul. 24, 1978, Ser. No. 927,205

Int. Cl.² H01R *9/00*

U.S. Cl. 339—198 H **4 Claims**



1. A colligated segmented electrical fanning strip for grouping a series of electrical conductors in a preselected sequence to detachably connect the electrical conductors to a segmented terminal strip having a corresponding series of spaced terminal members electrically insulated from one another, the improvement comprising:

a plurality of contiguous blocks of insulating material, each block having opposite parallel sidewalls, opposite parallel ends and opposite top and bottom walls;

an electrical contact secured within each block to establish a

group of spaced apart electrical contacts electrically insulated from one another and corresponding to a group of electrical conductors and spaced terminal members, each contact having a means for receiving electrical conductors adjacent to one end of the block and terminal projecting beyond the opposite end of the block in a direction normal thereto;

a pair of U-shaped channels projecting from the top and bottom edges of one sidewall of each block and extending from the one end toward the opposite end a predetermined distance parallel to the one sidewall with their openings facing one another;

a J-shaped channel defined by the upper edge of the other sidewall and the top wall of each block extending along a direction parallel to the opposite sidewall, the lower vertical side of said J-shaped channel forming the upper edge of the other sidewall of each block, the upper edge of the other sidewall being in the same plane as the inner bottom wall of the upper channel on the one sidewall of each block so that the lower vertical side of the J-shaped channel of one block interfits into the recess of the upper channel on an adjacent block; and

a bottommost edge on the other sidewall of each block extending below the bottom wall of each block a predetermined distance and extending from the one end toward the opposite end parallel to the upper edge of the other sidewall before terminating in a laterally extending ear so that the blocks are assembled into a colligated segmented electrical fanning strip by having the J-shaped channel of one block interfit into the upper channel on the one sidewall of an adjacent block to place the one block and the adjacent block in a side-by-side relationship which permits the blocks to be pressed together to snap the bottommost edge of the other sidewall of the one block into the recess of the upwardly facing channel on the bottom edge of the adjacent block to establish a non-rotatable and non-moveable connection between the blocks in a colligated state.

4,184,734

LAMPHOLDER

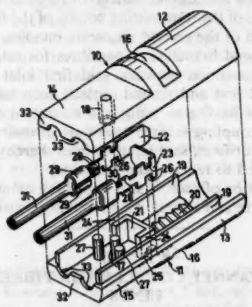
Sven Toorell, Hok, Sweden, assignor to AB Coripen, Runstensv., Sweden

Filed May 1, 1978, Ser. No. 901,648

Claims priority, application Denmark, May 3, 1977, 1932/77; Sweden, Aug. 19, 1977, 7709343

Int. Cl.² H01R *13/58*

U.S. Cl. 339—210 T **13 Claims**



5. Lampholder having a socket for an incandescent lamp bulb, a center contact blade, a shell contact blade, retaining means for holding said contact blades and insulated electric conductors having stripped ends connected to said contact blades in the lampholder, said lampholder comprising two halves united with each other on a substantially axial plane along a major portion of their axial length, one of said halves having a greater axial extension than the other and having an annular end portion with a through hole for said electric conductors connected to the lampholder.

4,184,735

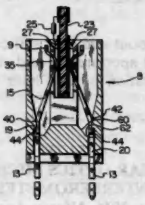
DISCRETE CONNECTOR

J. Preston Ammon, and Harry R. Weaver, both of Dallas, Tex., assignors to Elfab Corporation, Dallas, Tex.

Filed May 22, 1978, Ser. No. 907,977

Int. Cl.² H01R *13/42*

U.S. Cl. 339—217 S **9 Claims**



1. An improved discrete electrical connector of the type having a plurality of contacts received within an insulative housing for mounting upon a planar substrate, wherein the improvement comprises:

an insulative housing having sleeves formed therethrough and open at the top for permitting the contacts to be inserted therein, said sleeves being formed with pairs of spaced detent shoulders, each having an upwardly facing tapering configuration to facilitate movement of a contact collar portion downwardly past said detent shoulders, said detent shoulders being transversely spaced to define an open area therebetween and including a downwardly facing ledge portion thereunder for retaining a contact collar portion beneath said detent shoulders, said housing also including a lower inside wall terminating in a generally horizontal edge to define a line of flexure for contacts inserted into said sleeves; and

contacts positioned in each of said sleeves, each contact having a generally transversely extending collar portion intermediate thereof and a necked portion beneath said collar defining a flexure section thereacross for permitting transverse elastic flexure of the contact during positioning of said contact collar portions beneath said detent shoulders, said necked portion also defining a line of plastic deformation flexure adjacent said generally horizontal edge to permit permanent bending of a contact from beneath said detent shoulders for removal of a contact from a sleeve within the insulative housing.

4,184,736

TWO-PIECE CONTACT ASSEMBLY FOR ELECTRICAL CONNECTOR ASSEMBLIES

Tedford H. Spaulding, Norridge, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 821,620, Aug. 3, 1977, abandoned. This application Apr. 11, 1978, Ser. No. 895,170

Int. Cl.² H01R *13/12*

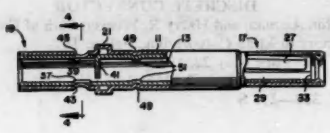
U.S. Cl. 339—258 R **14 Claims**

1. A contact assembly adapted to terminate an electrical conductor at one end and to receive and make electrical connection with a compatible contact member at its other end, said contact assembly comprising:

a tubular shell having a forward contact receiving portion, a rearward crimp barrel portion, and two apertures extending through said shell on generally opposite sides of said crimp barrel portion; and

a tubular liner mounted coaxially within said tubular shell and including a forward portion for engaging said com-

patible contact member and a rearward portion for crimp-terminating said conductor, said liner also including a generally transverse slot longitudinally aligned with said apertures in said shell, said transverse slot extending circumferentially about said liner sufficiently to align with at least one of said apertures in said shell regardless of the rotational orientation of said liner with respect to said shell.

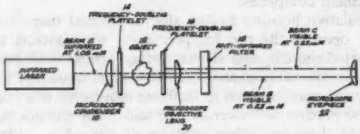


4,184,737

NONLINEAR OPTICS MICROSCOPE INTERFEROMETER

Joseph G. Hirschberg, 1046 Alfonso Ave., Coral Gables, Fla. 33146

Filed May 4, 1978, Ser. No. 902,822
Int. Cl.[2] G02B *21/14*
U.S. Cl. 350—13 **10 Claims**



1. An interference microscope based on the principles of non-linear optics for measuring optical thickness of a transparent object comprising a microscope having in optical alignment a condenser, objective lens, object to be viewed and eyepiece, in combination with

one frequency doubling platelet positioned between said condenser and object;

a second frequency doubling platelet placed after said object; and

an anti-infrared filter positioned after said second frequency doubling platelet;

to form an interference microscope in which the optical thickness of said object oriented in any direction is determined quantitatively by passing an invisible infrared laser beam from said condenser and through the microscope to provide a visible image in which the phase shift of the resultant two visible beams appearing at the eyepiece is measured and the optical thickness is calculated.

4,184,738

LIGHT COUPLING AND MODULATING MEANS

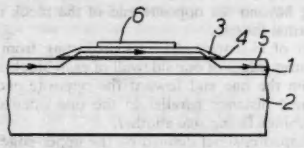
Stephen Wright, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 2, 1978, Ser. No. 874,590
Claims priority, application United Kingdom, Feb. 22, 1977, 07370/77
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.14 **16 Claims**

1. Apparatus for electro-optic modulating and/or switching multi-mode light, comprising:

optical waveguide means made from optically transmissive material deposited on a substrate whose refractive index is less than that of the waveguide material;

a slab of an optically transmissive material whose refractive index is higher than that of the waveguide material bonded on the waveguide material, said slab having tapered regions at each of its ends so as to enable the transfer of light from the waveguide into the slab at one end and the transfer of light from the slab into the waveguide at the other end, in which the dimensions of said waveguide and of said slab are such as to permit multimode light transmission; and



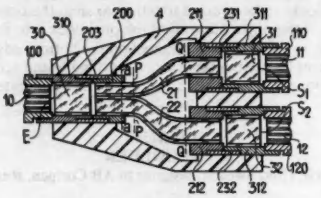
electrode means applied to the outer face of said slab to which electrical signals may be applied for modulating the light in said waveguide.

4,184,739

BRANCHER-MIXER FOR BUNDLES OF OPTICAL FIBRES

Luigi d'Auria; André Jacques, and Jacques Dubos, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 18, 1977, Ser. No. 779,094
Claims priority, application France, Mar. 23, 1976, 76 08389
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.15 **5 Claims**



1. A brancher-mixer for distributing, in connections by bundles of optical fibres, the radiation emanating from a transmitting bundle between first and second receiving bundles, said brancher-mixer comprising:

n inlet and first and second outlets for respectively receiving the orifices of the transmitting bundle of the first receiving bundle and of the second receiving bundles; and

first and second branching monofibres for establishing the optical connection between said first inlet and respectively said first and second outlets; each said branching monofibres having an input and an output orifice and a common coupling surface over part of their length from said input orifices, said input orifices thereby being laterally coupled to receive said radiation;

the cross section of each of said branching monofibres being non uniform and having a substantially constant area.

4,184,740

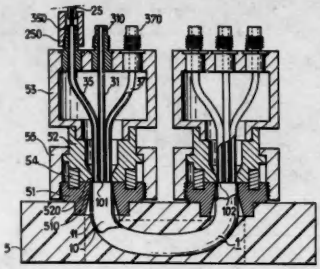
MULTI-CHANNEL COUPLER FOR FIBRES OPTIC LINKS

Luigi d'Auria; Jacques Dubos, and Andre Jacques, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 28, 1977, Ser. No. 837,412
Claims priority, application France, Oct. 1, 1976, 76 29608
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.16 **7 Claims**

1. A multichannel coupler for fibres optic links, enabling a first and a second plurality of optical fibres to be interconnected and comprising a simple central mixing optical monofibre limited by a first and a second terminal face respectively

associated with said first and said second plurality for distributing between the apertures of the fibres of the associated plurality at least part of the radiation received by the other terminal



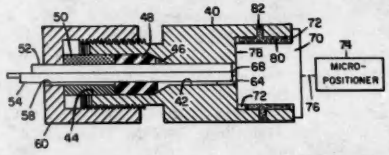
face and originating from the aperture of an arbitrary one of the fibres of the other plurality; said first and said second terminal faces being arranged in a same first plane.

4,184,741

FILAMENT-TO-DEVICE COUPLER

Robert M. Hawk, Bath, and Robert A. Wey, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 27, 1978, Ser. No. 881,622
Int. Cl.[2] G01B 5/14
U.S. Cl. 350—96.20 **11 Claims**



1. A coupler for accurately positioning the endface of an optical waveguide filament with respect to the active area of an optoelectronic device, said coupler comprising

a housing having a bore therein, one end of said bore terminating at a surface,

three rods, the ends of which are so disposed in said bore that an aperture is formed therebetween that is adapted to receive an optical waveguide filament,

means for securing only the end portions of said rods in that end of said bore adjacent said surface,

means separate from said means for securing for forcing said rods inwardly toward said aperture for securing any filament disposed therein, said means for forcing being located at a region along the length of said rods that is remote from said end portions, and

means for supporting an optoelectronic device adjacent said surface so that a filament can be inserted into that portion of said aperture opposite said end portions and moved toward said end portions until it is adjacent to said device.

4,184,742

HERMAPHRODITIC FIBER OPTIC CONNECTOR

Patrick G. Corrales, Garden Grove, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

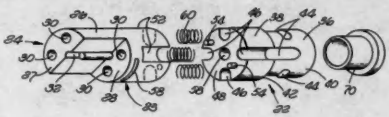
Filed Oct. 26, 1978, Ser. No. 955,178
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.21 **5 Claims**

1. A hermaphroditic connector member for a fiber optic cable having a plurality of single optical fibers comprising:

a hollow yoke having a forward end and a rear;

a cylindrical ferrule guide member at the front of said yoke having a stepped forward end providing a forward semi-cylindrical segment terminating in a front semi-cylindrical surface and a rear forwardly facing semi-cylindrical surface behind said front surface;

a plurality of cylindrical alignment bores extending axially through said guide member symmetrically arranged relative to said stepped forward end and the center axis of said guide member, said bores opening at said front and rear surfaces, respectively;



a cylindrical fiber optic ferrule slidably mounted in each of said bores, said ferrules having mating end faces located between said front and rear surfaces; and

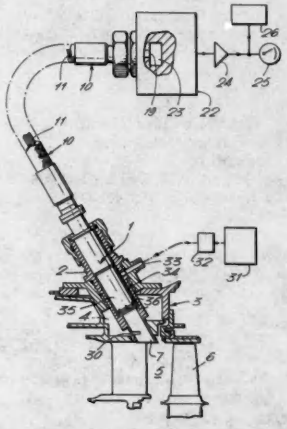
said hollow yoke having slots opening radially through the wall thereof and at said forward end in alignment with said bores whereby the optical fibers of the cable may be extended outside of said yoke for termination to said ferrules.

4,184,743

FIBRE-OPTIC CABLE

Peter D. Baker, Basingstoke, and Douglas V. Luke, Farnham Common, both of England, assignors to Smiths Industries Limited, London, England

Filed Feb. 7, 1978, Ser. No. 875,839
Claims priority, application United Kingdom, Feb. 8, 1977, 5213/77
Int. Cl.[2] G02B 5/16
U.S. Cl. 350—96.23 **10 Claims**



1. A fibre-optic cable including an optical fibre-bundle for transmission of radiation along its length; a first ferrule and a second ferrule, one end of said fibre-bundle being fitted within said first ferrule, the other end of said fibre-bundle being fitted within said second ferrule; and a permeable sheath of an open-weave fibre material, said sheath surrounding and contacting said fibre-bundle along a major part of its length, and said sheath being secured at both ends to respective ferrules in tension such that said sheath is constricted onto said fibre-bundle so as tightly to enclose said fibre-bundle, including an outer metal shell, said fibre-bundle extending within said shell, wherein said shell is sealed at one end to said first ferrule and

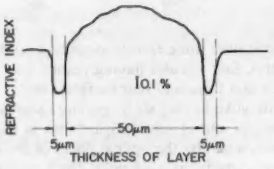
at the other end to said second ferrule so as to enclose said fibre-bundle along its length.

4,184,744

OPTICAL FIBER

Seiichi Onoda, Tokorozawa; Toshiki P. Tanaka, Tokyo, and Masao Sumi, Higashi-yamato, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of, Japan

Filed Nov. 1, 1976, Ser. No. 737,266
Claims priority, application Japan, Nov. 10, 1975, 50-134046
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.33 **4 Claims**



1. An optical fiber comprising:

a cylindrical core of dielectric material having an index of refraction which varies in the radial direction of the core;

an intermediate layer disposed on said core and being made of a dielectric material which has a uniform index of refraction;

a cladding layer disposed on said intermediate layer and being made of a dielectric material which has a uniform index of refraction higher than the index of refraction of said intermediate layer, and wherein

the index of refraction of said core at the central portion thereof is higher than the indices of refraction of said cladding layer and said intermediate layer, and the index of refraction of the periphery of said core is substantially equal to the index of refraction of said cladding layer, wherein the thickness of said intermediate layer lies within a range of 0.1 to 1 times the radius of the core.

4,184,745

TRANSLUCENT SCREEN

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 8, 1978, Ser. No. 884,706
Int. Cl.[2] G03B *21/60*; C08L *3/00*; C09D *3/20*; C09J *3/06*
U.S. Cl. 350—126 **12 Claims**

1. A translucent screen consisting essentially of a dispersion of rice starch particles as a discontinuous phase in a polymeric continuous phase, said starch particles having non-planar and non-parallel surfaces and having overall diameters not exceeding about 15 microns.

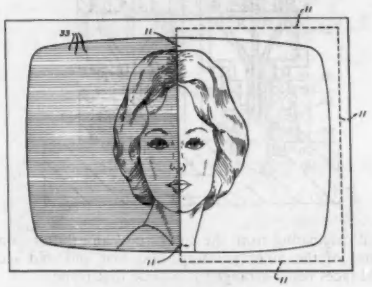
4,184,746

TRANSMISSIVE DIFFRACTIVE PHASE-GRATING

Edgar B. Coale, c/o Max Levy & Co. Inc., Wayne Ave. & Berkley St., Philadelphia, Pa. 19144

Division of Ser. No. 304,200, Nov. 6, 1972, Pat. No. 3,842,202.
This application Oct. 11, 1974, Ser. No. 514,199
Int. Cl.[2] G02B *5/18*
U.S. Cl. 350—162 R **2 Claims**

1. A transmissive diffractive phase-grating comprising a parallel-sided transparent polished plate having an index of refraction of the order of the indexes of refraction of plate glass, Plexiglass and commonly-used clear transparent optical glasses and optical plastics, at least one side of which plate is composed of two sets of alternating polished surface-portions, the surface-portions of each set being generally uniformly spaced apart and co-planar with each other and being of generally equal areas, and the surface-portions of one set alternating with the surface-portions of the other set in generally uniform array, and the co-planar surface-portions of one set being offset with respect to the co-planar surface-portions of the other set, with the common plane of the one set being parallel with the common plane of the other set, and the thickness of the plate in the areas of one set and the thickness of the plate in the areas



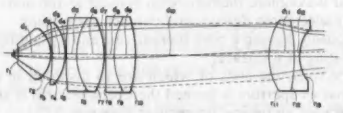
of the other set differing by about 6100 Angstrom units, whereby substantially all transmission of generally all frequencies of visible light incident thereon is nulled and such pencil thereof is diverted and distributed into a pair of diffractive first-order spectral images each containing approximately one-half of the energy which had been the energy of the so nulled incident light.

4,184,747

MICROSCOPE OBJECTIVE

Toshifumi Uetake, Hachiouji, Japan, assignor to Olympus Optical Co., Limited, Tokyo, Japan

Filed Oct. 5, 1977, Ser. No. 839,742
Claims priority, application Japan, Oct. 14, 1976, 51-123160
Int. Cl.[2] G02B *9/60*
U.S. Cl. 350—175 ML **11 Claims**



1. A microscope objective comprising a first, second, third, fourth and fifth lens components, said first lens component being a thick negative meniscus lens arranged concave toward the object side, said second lens component being a positive meniscus lens arranged concave toward the object side, said third lens component being a positive cemented doublet, said fourth lens component being a positive cemented doublet, said fifth lens component being negative cemented meniscus doublet arranged concave toward the image side, said microscope objective satisfying the following conditions:

$$1.75 \leqq \frac{n_1 - 1}{r_1} / \frac{n_1 - 1}{r_2} \leqq 1.95 \quad (1)$$

$$1.45 \leqq n_1 d_1 / f \leqq 2.15 \quad (2)$$

$$1.25 \leqq \frac{n_8 - 1}{r_{13}} / \frac{n_7 - 1}{r_{11}} \leqq 1.55 \quad (3)$$

$$1.30 \leqq \frac{n_7 d_{11} + n_8 d_{12}}{f} \leqq 2.35 \quad (4)$$

$$-0.05 \leqq \frac{n_3 - 1}{r_5} f \leqq 0.050 \quad (5)$$

-continued

$$3.0 \leqq \frac{d_{10}}{f} \leqq 5.0 \quad (6)$$

$$90 \leqq [(\nu_4 - \nu_3) + (\nu_6 - \nu_5)] \leqq 120 \quad (7)$$

wherein reference symbol f represents the focal length of the lens system as a whole, reference symbols r_1 and r_2 respectively represent radii of curvature of respective surfaces of the first lens component, reference symbol r_5 represents the radius of curvature of the surface on the object side of the third lens component, reference symbols r_{11} and r_{13} respectively represent radii of curvature of the surface on the object side and surface on the image side of the fifth lens component, reference symbol d_1 represents the thickness of the first lens component, reference symbols d_{11} and d_{12} respectively represent thicknesses of respective lenses constituting the fifth lens component, reference symbol d_{10} represents the airspace between the fourth and fifth lens components, reference symbol n_1 represents the refractive index of the first lens component, reference symbol n_3 represents the refractive index of the lens on the object side in the third lens component, reference symbols n_7 and n_8 respectively represent refractive indices of respective lenses constituting the fifth lens component, reference symbols ν_3 and ν_4 respectively represent Abbe's numbers of respective lenses constituting the third lens component, and reference symbols ν_5 and ν_6 respectively represent Abbe's numbers of respective lenses constituting the fourth lens component.

4,184,748

DEVICE FOR EXPANDING PRACTICALLY PARALLEL LIGHT RAYS

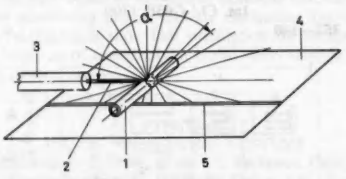
Hans-Peter Kugler, Saldingerstr. 16, D-7507 Pfinztal-4, and Norbert Eisenreich, Amselstr. 16, D-7507 Pfinztal-1, both of Fed. Rep. of Germany

Filed Oct. 26, 1977, Ser. No. 845,724

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650023

Int. Cl.[2] G02B *3/06*

U.S. Cl. 350—190 **8 Claims**



1. A device comprising means for providing practically parallel light rays, a cylindrical lens for expanding the practically parallel light rays and means for detecting objects moving outside of the lens said lens being fully cylindrical in design and having an interior cylindrical portion and a peripheral portion surrounding said interior cylindrical portion with an interface between said portions, said interior cylindrical portion being formed from a medium which is optically thinner than said peripheral portion, and said lens being arranged to be disposed relative to said practically parallel light rays such as to give total reflection at the said interface, the light rays being expanded two-dimensionally to an aperture angle of up to 360° with an intensity distribution that is practically constant.

4,184,749

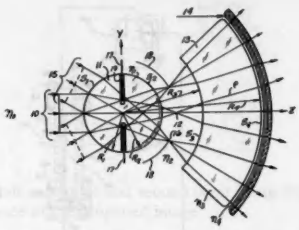
WIDE ANGLE NARROW BANDPASS OPTICAL FILTER SYSTEM

Jack J. Grossman, Manhattan Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 22, 1978, Ser. No. 918,160

Int. Cl.[2] G02B *3/00, 5/28*

U.S. Cl. 350—195 **31 Claims**



1. A wide angle narrow bandpass lens and optical filter system comprising:

a. at least one spherical lens for receiving light at a plurality of angles at the first surface of said spherical lens, and for focusing said light at a plurality of image points outside a second opposite surface of said spherical lens,

b. at least one concentric lens comprising inner and outer surfaces, all points of each surface equally distant from said spherical lens center, positioned so that said image points are located between said second surface and said inner surface, and

c. a filter, all points of said filter equally distant from said spherical lens center, positioned so that said concentric lens is located between said filter and said image points.

4,184,750

NOVEL LIQUID CRYSTAL DYESTUFFS AND ELECTRO-OPTIC DEVICES INCORPORATING SAME

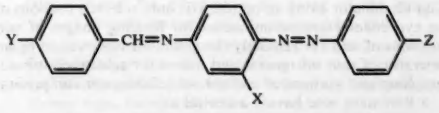
Allen Bloom, East Windsor, and Ling K. Hung, Edison, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 741,538, Nov. 12, 1976, Pat. No. 4,105,654. This application Apr. 24, 1978, Ser. No. 899,274

Int. Cl.[2] C02F *1/13;* C09K *3/34*

U.S. Cl. 350—349 **6 Claims**

1. In an electro-optic device comprising a nematic liquid crystal composition with a positive dielectric anisotropy between two electrodes, the improvement which comprises the addition to the liquid crystal composition of a liquid crystal dyestuff of the formula:



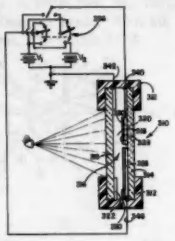
wherein Y and Z are different one is nitro or cyano and the other is $—N(R)_2$ wherein R is alkyl or alkylene, of 1 to 8 carbon atoms, and X can be hydrogen, methyl, fluoro or chloro.

4,184,751

PHTHALOCYANINE ELECTROCHROMIC DISPLAY

Margie M. Nicholson, San Marino, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 752,950, Dec. 20, 1976, abandoned.
This application Oct. 4, 1978, Ser. No. 948,364
Int. Cl.[2] G02F 1/17
U.S. Cl. 350—357 13 Claims



1. A low power, rapid switching, electrochromic display device comprising:

housing means including a substantially transparent viewing surface;

display electrode means disposed within said housing for being viewed through said viewing surface;

electrochromic material means disposed as a film within said housing over said display electrode means and in conductive relationship thereto, said electrochromic material means including an electrochromic metal-diphthalocyanine complex;

electrolyte means disposed within said housing in conductive relationship to said electrochromic film;

counterelectrode means disposed within said housing in electrically conducting relationship to said electrolyte means;

lead means for connecting said dipslay electrode means and said counterelectrode means to a display control circuit;

said lead means, said electrochromic material means, said display electrode means, said electrolyte means and said counterelectrode means together comprising a structure exhibiting an apparent capacitance and an apparent resistance, said lead means, said display elecrrode means, said electrolyte means and said counterelectrode means being sufficiently conductive that said apparent resistance of said structure and said apparent capacitance of said structure combine to provide an RC time constant of one second or less.

4,184,752

INSTRUMENT ILLUMINATOR

William Richards, Medway, and Bernard Grolman, Worcester, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Apr. 7, 1978, Ser. No. 894,226
Int. Cl.[2] A61B 3/10, 3/14; G03B 29/00
U.S. Cl. 351—16 3 Claims

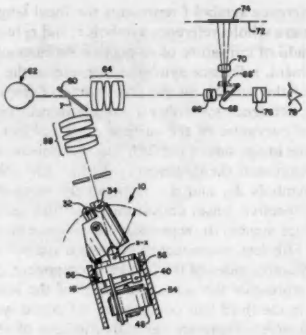
1. In the system of an ophthalmological instrument having an illuminator, means for receiving and directing light from said illuminator along an optical axis onto selected portions of an eye under examination, means for forming images of said portions of said eye remotely therefrom for observation by an operator of said instrument and means for selectively photographing said portions of said eye, said illuminator comprising:

a stationary base having a central axis;

a lamp holder pivotally mounted on said base about an axis extending substantially right-angularly through said central axis;

a pair of spaced lamps carried by said holder, the principal light-emitting points of said lamps being equally radially spaced from said pivotal axis of said holder and disposed in a plane intersecting said central axis;

biasing means resiliently fixing said holder in a first position of rotation about said pivotal axis where the principal light-emitting point of a first of said lamps lies approximately on said central axis of said base;



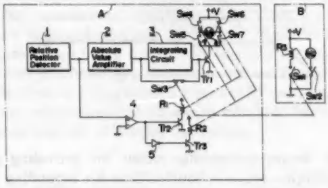
means for selectively pivotally moving said holder from said first position of rotation about said pivotal axis to a second rotated position for bringing the principal light-emitting point of the second of said pair of lamps into substantial coincidence with said central axis, said means for moving said holder being selectively releasable for permitting automatic return of said holder to said first position of rotation by said biasing means.

4,184,753

AUTOMATIC FOCUS ADJUSTMENT CIRCUITRY FOR MOTION PICTURE CAMERAS

Nobuo Hashimoto, Ashiya, and Hiroshi Hirata, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 1, 1978, Ser. No. 965,410
Claims priority, application Japan, Dec. 22, 1977, 52-153638
Int. Cl.[2] G03B 3/00
U.S. Cl. 352—140 6 Claims



1. A motion picture camera having an adjustable focus, comprising:

means for driving said camera for photographing;

an automatic focus adjusting device for detecting the focus condition of said camera on a target object and for automatically adjusting the focus condition of said camera in accordance with the detected focus condition; and

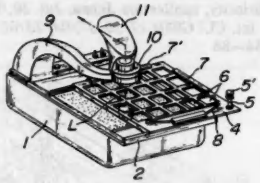
means for slowing the response of said automatic focus adjusting device during photographing than before photographing.

4,184,754

OVERHEAD PROJECTOR

Jiro Ozeki, Tokyo, Japan, assignor to Keihoku Seiki Manufacturing Company, Tokyo, Japan

Filed Oct. 27, 1977, Ser. No. 846,199
Int. Cl.[2] G03B *21/14*
U.S. Cl. 353—27 R **8 Claims**



1. Apparatus, changeable between reflection projection and transmission projection modes, for projecting, onto an appropriate screen, image-containing slide films, said apparatus comprising:

an overhead projector including a projector body;

a stage movable longitudinally and transversely above a projector body;

positioning means for determining movement distances of said stage at determined distance intervals;

at least two guide members fixed to an upper surface of said stage;

a file page having a plurality of said slide films fitted therein in rows and columns, said slide films being spaced apart, in said file page, at distances correspondingly equal to said movement distances determined by said positioning means;

a plurality of reference edges provided on the file page spaced apart at equidistances from crosswise and lengthwise center axes of the file page and abutting against said guide members when the file page is positioned on the stage, and

wherein, upon the change of projection modes, said file page may be reoriented into any position onto said stage for proper orientation of slide images as they appear on said screen, said guide members and said reference edges cooperating in a butting relationship for ensuring that said reoriented file page is positioned on said stage so that the repositioned slide films are spaced apart at distances correspondingly equal to movement distances determined by said positioning means, thereby eliminating the need of correcting each slide film orientation by removal and re-insertion of each individual slide film relative to said file page.

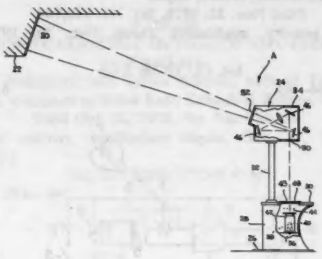
4,184,755

IMAGE PROJECTION SYSTEMS

David E. Burgess, 2625 W. 182nd St., Torrance, Calif. 90504, and Darrell J. Masters, 15636 S. Yukon Ave., Lawndale, Calif. 90260

Continuation-in-part of Ser. No. 668,594, Mar. 19, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 841,018
Int. Cl.[2] G03B *21/56*
U.S. Cl. 353—45 **13 Claims**

1. An image displaying screen of the type used with a conventional image projection system for projecting an image to the screen, said image displaying screen comprising a first layer of a relatively thick organic polymer material, a second layer of a metal foil having a dull surface and an oppositely disposed glossy surface and providing image displaying characteristics, said second layer being incidental to and secured to said first layer such that the glossy surface is incidental to the first layer, a third layer of polymer material incidental to and being secured to the dull surface of said second layer, and a fourth layer incidental to and secured to said third layer and having a thickness so that it is transmissive of light, said fourth



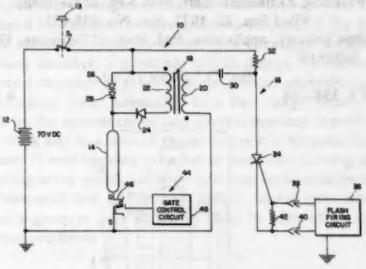
layer and the dull surface of said second layer being disposed toward the source of the projected image.

4,184,756

STROBE WITHOUT PRIMARY STORAGE CAPACITOR

Edwin H. Land, Cambridge, and Conrad H. Biber, Needham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 13, 1978, Ser. No. 951,120
Int. Cl.[2] G03B *7/16, 15/03*
U.S. Cl. 354—33 **7 Claims**



1. An electronic flash unit of the type powered by a battery without the use of a primary storage capacitor, said flash unit comprising:

a housing;

a flash discharge tube;

trigger circuit means responsive to an applied flash fire trigger signal for effecting a discharge of the battery voltage directly through said discharge tube; and

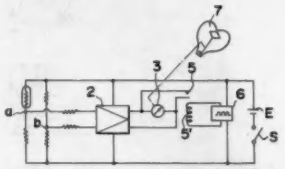
gating means connected in series relation with respect to said flash discharge tube for controlling the time duration of said discharge from the battery voltage through said discharge tube, said gating means being in a generally conductive state upon the triggering of said flash tube and thereafter switching to a generally nonconductive state subsequent to the expiration of a time delay of sufficient duration for said flash tube to provide a select amount of artificial illumination.

4,184,757

EXPOSURE SERVO-CONTROL DEVICE FOR CAMERAS

Takashi Kondo, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 22, 1978, Ser. No. 962,944
Claims priority, application Japan, Dec. 16, 1977, 52-168267[U]
Int. Cl.[2] G03B 7/08
U.S. Cl. 354—43 8 Claims



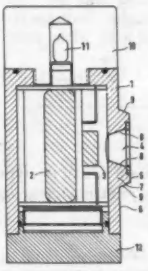
1. An exposure servo-control device for a camera having a shutter and an adjustable diaphragm for regulating the amount of light impinging on the film, said device comprising:
an electric circuit for generating an output dependent on the deviation from an optimum aperture for an object to be photographed to the present instantaneous diaphragm aperture;
an electromagnetic device including a driving coil across which said output is applied for excitation thereof, said electromagnetic device driving said diaphragm by the electromagnetic force caused by the excitation of said driving coil;
switch means for short-circuiting said driving coil; and
control means for intermittently actuating said switch means so that said driving coil is intermittently short-circuited.

4,184,758

DEEP SEA UNDERWATER CAMERA

Helmut Winnacker, Burgdorf, Fed. Rep. of Germany, assignor to Preussag Aktiengellschaft, Fed. Rep. of Germany

Filed Sep. 22, 1977, Ser. No. 835,437
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1976, 2656516
Int. Cl.[2] G03B 17/08
U.S. Cl. 354—64 4 Claims



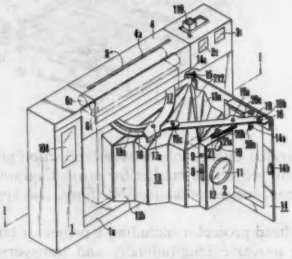
1. An underwater camera housing for deep sea use comprising,
a pressure-tight, substantially cylindrical housing for enclosing a camera therein,
a thickened cylindrical bead on the cylindrical surface of said cylindrical housing, said bead being arranged eccentrically of said cylindrical housing to define an area on one side of said housing which is thicker than the opposite side of said housing, and
a window opening through said housing and being located adjacent the objective of the camera when said camera is positioned in said housing and in said thicker area of said bead for exposing the film in said camera.

4,184,759

PHOTOGRAPHIC APPARATUS

Fumio Ito, and Mutsunobu Yazaki, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1977, Ser. No. 819,571
Claims priority, application Japan, Jul. 30, 1976, 51/91093
Int. Cl.[2] G03B 17/50, 17/04, 13/02, 3/00
U.S. Cl. 354—86 12 Claims



1. A collapsible photographic apparatus comprising:
(a) a front housing having:
a photographic lens optical system;
photographic lens optical system position adjusting means for moving at least a part of said photographic lens optical system along an optical axis thereof to adjust the position at which said photographic lens optical system forms an image on said optical axis;
a motor for driving said photographic lens optical system position adjusting means; and
lens optical system position information output means for producing an output corresponding to the movement of said movable lens optical system in said photographic lens optical system when said movable lens optical system is moved;
(b) a rear housing having a photosensitive material receiving chamber into which a photosensitive material is loaded;
(c) a distance measuring instrument for detecting the distance from said photographic apparatus to an object to be photographed, being arranged in said rear housing;
(d) distance information output means for producing an output corresponding to distance detecting operation of said distance measuring instrument, said means being arranged in said rear housing; said distance information output means having indicating means for indicating in said finger that said distance measuring instrument has completed the distance detecting operation;
(e) folding means capable of permitting said rear housing and said front housing to be moved from a state in which said rear housing and said front housing are largely spaced apart from each other to a state where said rear housing and said front housing are extremely close to each other in a folded condition, thereby at least a portion of said front housing is received in said rear housing;
(f) electrical channel cord means for electrically interconnecting said front housing and said rear housing; and
(g) electrical circuit means for driving said motor until the output of said lens optical system position output means and the output of said distance information output means become a predetermined relationship; said means being electrically connected through said electrical channel cord means to said lens optical system position information output means, said distance information output means and said motor.

4,184,760

SCANNING SHUTTER BLADE ARRANGEMENT WITH INERTIAL WHEEL

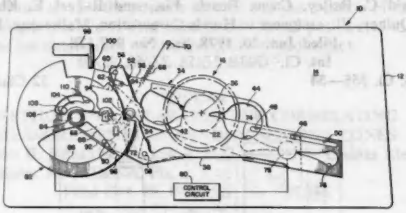
George D. Whiteside, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 850,792, Nov. 11, 1977, abandoned. This application Feb. 7, 1979, Ser. No. 10,071

Claims priority, application ,

Int. Cl.[2] G03B *9/08, 9/58*

U.S. Cl. 354—230 11 Claims



1. A photographic camera apparatus including means for mounting photographic film material at a given focal plane, said camera comprising:

a blade mechanism;

means for mounting said blade mechanism for displacement between a first arrangement wherein it precludes scene light from reaching the film plane and a second arrangement wherein it defines a maximum size aperture, said blade mechanism serving to define a range of progressively increasing sized apertures for admitting scene light to the film plane as it is moved from its said first arrangement to its said second arrangement, said mounting means additionally including a mounting member pivotally disposed for rotation about a first axis, said mounting member also connecting to said blade mechanism so as to pivot in one direction when said blade mechanism is moved from its said first arrangement toward its said second arrangement and to pivot in the direction opposite to said one direction when said blade mechanism is moved from its said second arrangement toward its said first arrangement;

selectively actuable drive means for moving said mounting member and said blade mechanism between its said first and second arrangements;

an inertial member disposed for rotation about a second axis parallel to said first axis and including a portion engagable by said mounting member so as to be rotated from an initial position by said mounting member as said mounting member rotates in its said one direction thereby imparting a slower aperture opening movement to said blade mechanism than would otherwise occur as said mechanism is moved from its said first arrangement toward its said second arrangement by said drive means, said inertial member being further configured not to engage said mounting member as said mounting member is rotated in its said other direction thereby accommodating an aperture closing movement of said blade mechanism by said drive means substantially unrestricted by the inertia characteristic of said inertial member; and

a spring element arranged to be engaged in a tightened condition solely by said inertia member as said mounting member is moved in its said one direction in order not to influence the aperture opening movement of said blade mechanism as said blade mechanism is moved from its said first arrangement toward its said second arrangement by said drive means, said spring element having one end thereof disposed in position to be engaged by said mounting member as said mounting member is moved in its said other direction so as to be further tightened by said mounting member to thereby rotate said inertia member back to its said initial position after said blade mechanism is returned to its said first arrangement by said drive means.

4,184,761

EXPOSURE CONTROL DEVICE OF SHUTTER FOR CAMERA

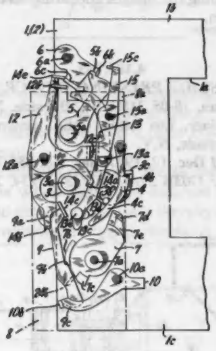
Tadashi Nakagawa, and Ichiro Nemoto, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Oct. 26, 1978, Ser. No. 954,864

Claims priority, application Japan, Oct. 28, 1977, 52-144631[U]

Int. Cl.[2] G03B *17/38, 9/64*

U.S. Cl. 354—267 3 Claims



1. An exposure control device for the shutter of a camera comprising, an opening member which opens the aperture of the shutter to start exposure; a closing member which closes said aperture to complete the exposure; an opening hook and a closing hook which retain at a charged position said opening member and said closing member, respectively; a control member released by shutter release operation to control the exposure time and to successively release said opening member and said closing member; a governor which delays the motion of said control member in proportion to desired exposure times; an interlocking lever adjustable to a first range where it is actuated by the movement of said control member to push said closing hook and to a second range where it is actuated by the movement of said opening member to push said closing hook; an adjusting lever which supports said interlocking lever operable within said first and second ranges; and a cam member which changesover said adjusting lever in proportion to desired exposure times.

4,184,762

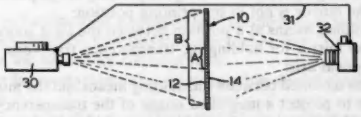
VARIABLE DEFINITION PROJECTION SYSTEMS

Oscar Guzman, 12 St. Dennis Dr., Apt. 228, Don Mills, Ontario, Canada (M3C 1E9)

Filed Jun. 16, 1978, Ser. No. 916,159

Int. Cl.[2] G03B *13/24, 13/36, 21/60*

U.S. Cl. 355—1 19 Claims



1. A screen for use in a rear projection system, comprising a body having a projection face and a viewing face, said body

comprising a plurality of blocks of translucent wax arranged in a side-by-side relationship and opaque barrier means disposed between adjacent sides of each block and extending between the projection face and the viewing face of the screen to prevent light transmission from one block to another through the sides of each block.

11. A method of preparing a series of photographic images of varying resolution comprising the steps of:

(a) projecting an image onto a projection face of a rear projection screen comprising a plurality of blocks of translucent wax arranged in a side-by-side relationship and opaque barrier means disposed between adjacent sides of each block to prevent light transmission from one block to another through the sides of each block, the projected image being visible at a viewing face of the screen disposed opposite the projection face,

(b) photographing the images appearing on the viewing face of the screen.

4,184,763

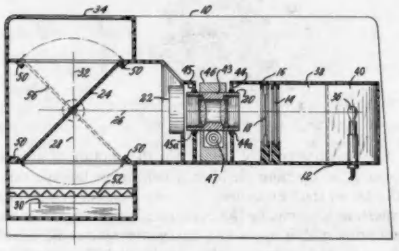
SLIDE PRINTING DEVICE

Fred B. Handsman, 18-05 215th St., Bayside, N.Y. 11360, and Thomas R. Joiner, Los Altos, Calif., assignors to Fred B. Handsman, Bayside, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,726

Int. Cl.[2] G03B *27/32, 13/28, 27/54, 27/76*

U.S. Cl. 355—27 **10 Claims**



1. Apparatus for printing a magnified image of a transparency, said apparatus being enclosed within a substantially light-tight enclosure and comprising:

a light source defining an optical axis and providing a substantially uniform illumination of said transparency, said light source including means for eliminating a substantial portion of infra-red and ultraviolet rays from said illumination;

a previewing image plane located laterally of said optical axis for viewing a projected image of said transparency, and a printing image plane located at a position remote from said previewing image plane and laterally of said optical axis, a photographic film being positionable at said printing plane for recording a projected image of said transparency;

a mirror mounted across the optical axis for movement between a previewing position in which it directs an image from the optical axis to said previewing image plane and a print position in which it directs the image from the optical axis to the printing image plane;

a light shield means coupled to said mirror and positioned between the mirror and the printing image plane for preventing light from reaching the printing image plane when the mirror is not in the printing position;

a holding means at a position between the light source and the mirror for holding the transparency transverse to the optical axis;

a lens mounted between the holding means and the mirror so as to project a magnified image of the transparency onto said image planes via said mirror, said lens having a focal length less than the diagonal dimension of the transparency and an entrance diameter larger than the diagonal dimension, the light from the source passing substantially uniformly and exclusively through the transparency and lens so that extraneous light is substantially excluded from the image planes; and

shutter means for controlling the transmission of light along the optical path to effectively control the exposure of the photographic film.

4,184,764

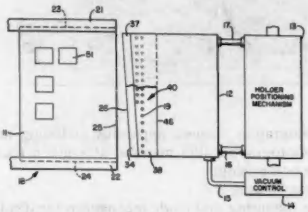
FILM HOLDING SYSTEM

David C. Bailey, Cocoa Beach, Fla., and Robert E. Klein, Quincy, Ill., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 20, 1978, Ser. No. 917,178

Int. Cl.[2] G03B *27/58, 27/60, 23/08*

U.S. Cl. 355—54 **32 Claims**



1. A system for supporting a recording medium and stably positioning said recording medium relative to a prescribed information communication device, comprising:

first means for engaging said recording medium such that the weight of said recording medium is borne in a cantilever fashion at a predetermined portion thereof; and

second means, associated with said first means, for stably maintaining a preselected portion of said recording medium the weight of which is borne in cantilever fashion by said first means within a prescribed region of said information communicating device without bearing the weight of said recording medium.

4,184,765

COPYING APPARATUS WITH DEVICE FOR TRANSPORTING SHEETLIKE ORIGINALS YET COVERING VARIOUS ORIGINALS FOR EXPOSURE

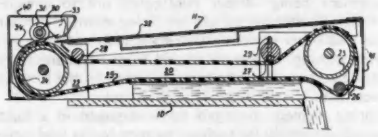
Theo P. C. Breuers, Venlo, Netherlands, assignor to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Apr. 7, 1978, Ser. No. 895,371

Claims priority, application Netherlands, Apr. 7, 1977, 7703835

Int. Cl.[2] G03B *27/62*

U.S. Cl. 355—75 **4 Claims**



1. In copying apparatus provided with an exposure plate and a device for covering an original on said plate and including means for transporting a sheetlike original from a position of readiness to a copying position on said plate, said device including a frame disposed above said plate, at least two rollers supported rotatably in bearings in said frame and a transport belt extending about and positioned by said rollers, said belt having a lower flight which extends over and in contact with

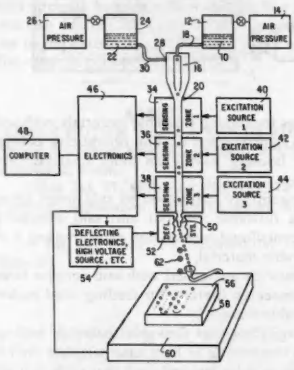
said plate and having an upper portion cooperating at its outer side with a roller to form a nip for feeding a sheetlike original, a surface adjacent to said nip for supporting a sheetlike original laid upon said surface in ready position with an edge of such original in said nip, and means for driving said belt during certain time intervals, the improvement which comprises said frame being displaceable away from said plate to an open position in which said plate is freely accessible to receive an object laid on said plate for exposure, and means supporting at least one of said belt positioning rollers displaceably relative to said frame so that the position thereof and the location of said belt flight relative to said plate in the closed position of said frame are determined by the thickness of said object.

4,184,766

METHOD AND APPARATUS FOR CORRELATING MEASUREMENTS OF TANDEM SENSING ZONES

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 28, 1976, Ser. No. 736,546
Int. Cl.[2] G01N *21/00*
U.S. Cl. 356—72 **8 Claims**



1. A method for obtaining information on the characteristics of particles in a liquid suspension comprising the steps of

(a) moving the liquid suspension in a stream through a plurality of sensing zones such that each particle passes through the plurality of sensing zones seriatum,

(b) measuring at each sensing zone at least one characteristic of each particle and the temporal relationship of said each measured particle with at least one other individual particle to derive a sequence of measurements including both those related to temporal relationships and those related to characteristics of individual particles;

(c) correlating the temporal relationships portion of the sequence of measurements at each sensing zone with one of the temporal relationships portion of the sequence of measurements of at least one of the preceding or succeeding sensing zones to match the particle characteristics at each sensing zone for each particle.

4,184,767

FREQUENCY AGILE OPTICAL RADAR

Richard S. Hughes, and Keith L. Gardner, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 21, 1975, Ser. No. 601,237
Int. Cl.[2] G01B *11/26*
U.S. Cl. 356—152 **8 Claims**

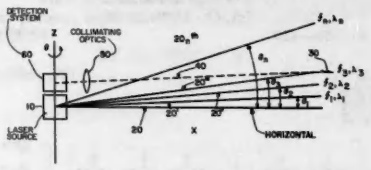
1. A frequency agile optical radar system comprising;

a frequency agile source of coherent radiation;

tuning means associated with said source for changing the frequency and corresponding wavelength of said source in a continuous manner;

fixed scanning means associated with said source such that the output of said source impinges on said scanning means;

said scanning means being operable to deflect said output in at least one plane at an angle dependent on the output frequency and corresponding wavelength λ of said source;



receiving means in said system for receiving reflected transmitted radiation from an object in space;

said receiving means including a fixed coherent radiation detecting means;

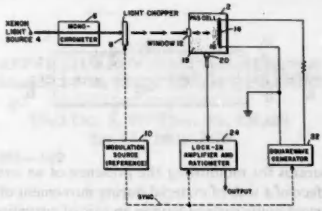
said coherent radiation detecting means being operative to determine the wavelength λ of detected reflected radiation from said object in space and thereby the angle to the object corresponding to that particular λ.

4,184,768

SELF-CALIBRATING PHOTOACOUSTIC APPARATUS FOR MEASURING LIGHT INTENSITY AND LIGHT ABSORPTION

John C. Murphy, Ellicott City, and Leonard C. Aamodt, Silver Spring, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Nov. 4, 1977, Ser. No. 848,706
Int. Cl.[2] G01J *3/42, 1/56*
U.S. Cl. 356—326 **33 Claims**



1. A self-calibrating photoacoustic spectrometer having a fluid-enclosing cell, said spectrometer comprising:

means for producing pulses of light;

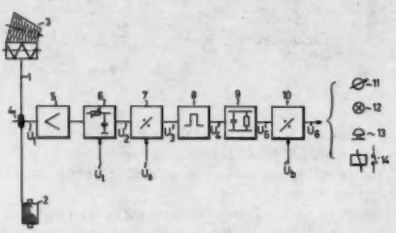
means for producing pulses of measurable electrical energy; and

an insertable solid, metal black, electrically conductive sample placed within the cell, said black sample being heated separately by the incidence of the pulses of light and the pulses of electrical energy onto the black sample.

4,184,769
DETERMINATION OF YARN DEFECTS

Kurt Aeppli, Uster, Switzerland, assignor to Zellweger Uster, Ltd., Switzerland

Continuation-in-part of Ser. No. 544,005, Jan. 24, 1975, Pat. No. 4,007,457. This application Sep. 3, 1976, Ser. No. 720,493
Claims priority, application Switzerland, Oct. 2, 1975, 12779/75
The portion of the term of this patent subsequent to Feb. 8, 1994, has been disclaimed.
Int. Cl.[2] C08B 21/00
U.S. Cl. 356—430 17 Claims



1. A method for the detection of yarn defects after the spinning thereof, comprising the steps of continuously running the yarn through a conventional yarn clearer system to remove thick places greater than a particular cross section in the yarn, continuously scanning the yarn as it passes a detection point, producing an electrical signal representing the cross section of the yarn passing said detection point, analyzing said electrical signal to determine the length and periodicity of defects in the yarn, and indicating detection of a defective yarn on the basis of occurrence of only predetermined sequences of thick places that approximate periodic defects that would be caused by the yarn spinning process itself in the yarn as determined from analysis of said electrical signal over a period of time.

4,184,770
MONITORING SYSTEMS

Gernot Pinior, Olching, Fed. Rep. of Germany, assignor to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik, Fed. Rep. of Germany

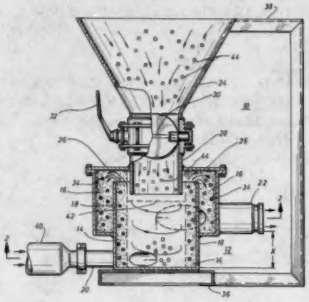
Filed Jan. 3, 1978, Ser. No. 866,730
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1977, 2700004
Int. Cl.[2] G01B 11/30
U.S. Cl. 356—430 9 Claims

1. Apparatus for monitoring the presence of an irregularity in the surface of a web of material during movement of the web over a curved guide surface having an axis of curvature which is aligned transversely to the direction of movement of the web and which guide surface is subject to sagging deflection, the monitoring apparatus comprising means for directing a sharply defined light beam skewed at a slight angle relative to said axis of curvature over the surface of the web of material so as to ensure that the light beam is aligned closely parallel to the surface of the web to thereby compensate for the sagging deflection, and photoelectric light receiving means arranged in the vicinity of the light ray for generating an output signal which changes as a function of the change in the light received by the light receiving means in response to the entry of the irregularity into the light beam.

4,184,771
CENTRIFUGAL MUD MIXER

Roger W. Day, Houston, Tex., assignor to Geosource Inc., Houston, Tex.

Filed Aug. 24, 1978, Ser. No. 936,643
Int. Cl.[2] B28C 5/06; B01F 3/12, 5/00
U.S. Cl. 366—3 19 Claims



1. Apparatus for mixing flowable materials with solid material for use in hydrocarbon drilling operations, comprising:

an annular housing having an inner chamber for mixing materials;

an inlet tangentially connected to said inner chamber for feeding a flowable material into said annular housing, causing centrifugal motion and thus creating a vortex in said flowable material;

means operatively associated with said annular housing and axially connected thereto, for feeding solid materials into said flowable material;

means for agitating said flowable materials and said solid materials comprising at least one partition wall disposed within said annular housing such that such flowable materials and said solid materials consecutively spill over said at least one partition wall moving in a radially outward direction to allow for further mixing of said flowable materials with said solid materials; and

an outlet tangentially connected to said annular housing, located in spaced parallel relationship above said inlet and outwardly of said partition wall for discharging a mixture of said flowable materials and said solid materials.

14. A method for mixing flowable materials with solid materials for use in hydrocarbon drilling operations comprising the steps of:

tangentially feeding a flowable material into an annular housing having a plurality of inner chambers for mixing so as to create a centrifugal motion in said flowable material resulting in forming a vortex in said flowable material;

axially feeding solid materials into said vortex within said annular housing for obtaining a high density mixture;

mixing said solid materials with said flowable materials by centrifugal motion propogating aid solid materials through said flowable materials in a radially outward direction;

agitating said mixture of said flowable and solid materials by spilling said mixture from the innermost chamber of said plurality of inner chambers into consecutive adjacent chambers moving in a radially outward direction while retaining the rotational velocity of said mixture in the same direction of rotation throughout said annular housing; and

tangentially discharging said mixture from said annular housing.

4,184,772

MIXING APPARATUS

Paul Meyer, Wiesbaden, Fed. Rep. of Germany, assignor to Frenkel C-D Aktiengesellschaft, Vaduz, Luxembourg

Filed Jul. 11, 1977, Ser. No. 814,421
Claims priority, application United Kingdom, Jul. 14, 1976, 29328/76; Jul. 1, 1977, 27623/77
Int. Cl.[2] B01F 7/08; B28C 1/16, 7/16; A21C 1/06
U.S. Cl. 366—77 6 Claims

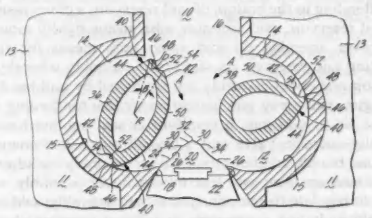
1. Continuously operating mixing apparatus comprising a rotor mounted to rotate on its axis within a coaxial barrel, the rotor having an external helical thread and the barrel having an internal helical thread of opposite hand to but coaxial with the helical thread on the rotor, said apparatus having at least one mixing zone wherein said threads vary in cross-sectional area in complementary fashion in respect to one another, and wherein said opposite-handed helical threads in a mixing zone complement one another substantially also in respect to their helix angles to the extent that if one helix angle is between 0° and 45°, the other is between 45° and 90°.

4,184,773

MIXER ROTOR WITH A SHEAR EDGE

Henry Ellwood, Rochdale, England, assignor to USM Corporation, Farmington, Conn.

Filed Jul. 27, 1978, Ser. No. 928,574
Claims priority, application United Kingdom, Aug. 11, 1977, 33676/77
Int. Cl.[2] B01F 7/02; B29B 1/06
U.S. Cl. 366—91 6 Claims



1. An internal mixing machine for plasticizing material supplied thereto, said mixing machine comprising:

a main body portion having an internal wall arrangement which defines a mixing chamber;

said internal walls of said mixing chamber being generally comprised of at least two transversely adjacent cylindrical bores arranged within said main body portion, wherein said mixing chamber, in cross-section has approximately the shape of a figure 8; and

a mixing rotor mounted for rotation in each of said cylindrical bores,

each of said rotors having at least one blade thereon, each blade comprising a leading side and a trailing side;

said leading side having a sharp edge formed at its outer extremity and facing in the direction of rotation of said blade;

each of said blades comprises a connecting surface, which in cross-section is generally flat, and which connects said leading side and said trailing side of each blade;

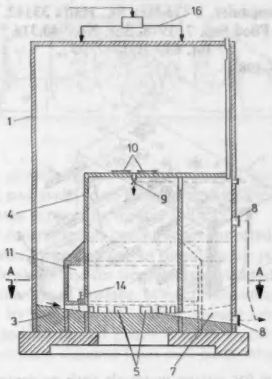
said leading edge in cross-section includes a convex surface separated from said sharp edge at the outer extremity of the leading edge, by a recess, said sharp edge being formed in cross-section where the surface of said recess meets said connecting surface of the blade, said recess, in cross-section, forming a part of a circle.

4,184,774

SILO FOR BULK MATERIAL

Werner Krauss, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters, AG., Hamburg, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,117
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727499
Int. Cl.[2] B01F 13/02
U.S. Cl. 366—107 5 Claims



1. A silo for bulk material, with a centrally arranged mixing or homogenizing chamber comprising:

A. ventilation means to feed the bulk material by ventilation of the silo base;

B. a ring-shaped channel or manway provided in association with said mixing or homogenizing chamber at a predetermined distance above the silo or chamber base;

C. said manway having at least one passageway to the external wall of the silo;

D. intake openings provided from the silo to the mixing and homogenizing chamber;

E. valve means operable from the ring-shaped channel provided in association with the intake openings; and

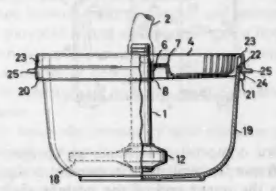
F. inspection openings provided in the manway for inspecting the intake openings.

4,184,775

APPARATUS FOR WASHING CEREALS

Nobuo Akizawa, 1-5-18, Koenji Minami Sugina-mi-ku, Tokyo, Japan

Filed Oct. 5, 1977, Ser. No. 839,669
Int. Cl.[2] B01F 7/16
U.S. Cl. 366—169 6 Claims



1. An apparatus for washing cereals and the like comprising

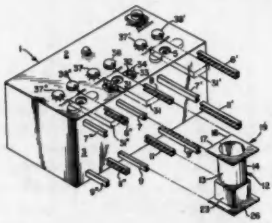
in combination a container, a hollow water supply tube having a rotor freely rotatably fitted to it and enclosing a hole formed at its lower part, the said rotor being provided with a rotation control part and a jet hole formed in a wall section of said rotor that extends radially of such rotor to give a reaction in the direction of its rotation, the water supply tube being adapted to have a pressurized water supply tube freely separably connected to it at its upper end, and a screening member which is freely fitted onto a off from the upper part of the container, and which has a plurality of openin therein, said supply tube passing through the screening member at a center area thereof.

4,184,776

MIXING AND DISPENSING OF DENTAL AND LIKE MATERIALS

Abraham Shampanier, 8 Tel-Hay St., Haifa 33142, Israel

Filed Sep. 7, 1978, Ser. No. 940,316
Int. Cl.[2] B01F *7/20*
U.S. Cl. 366—198 **9 Claims**



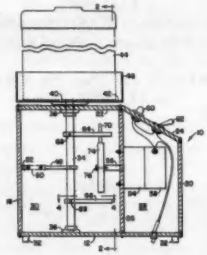
1. Apparatus for mixing materials such as dental materials comprising a support having fixed laterally extending guide track means, an open top receptacle adapted to be removably mounted in mixing position on said guide track means, motor means on said support, and a mixing rotor assembly comprising a gear box removably mounted on said support and having means for mounting a depending bladed rotor adapted to extend through the open mouth of said receptacle and a detachable reduction gear connection to said motor.

4,184,777

AGITATOR

Wayne R. Brouhard, Jr., 2026 Harrison, Apt. 2, Davenport, Iowa 52803

Filed Dec. 30, 1976, Ser. No. 755,662
Int. Cl.[2] B01F *11/00*; G03D *3/04*
U.S. Cl. 366—211 **4 Claims**



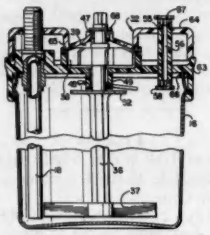
1. An agitator comprising: a frame; an upright shaft supported on the frame for oscillatory movement; a support member secured to the upper end of the upright shaft; a motor driven shaft supported by the frame substantially normal to the upright shaft; a first cam arm fixed to the motor-driven shaft and extending substantially radially therefrom; first and second striker arms fixed to the upright shaft equal distances from and on opposite sides of the motor driven shaft and extending substantially radially therefrom across the path of movement of the cam arm; yieldable means biasing the upright shaft to a neutral position; and a second radially-extending cam arm fixed to the motor-driven shaft and forming an acute angle with the first cam arm such that, when the first cam arm bears against one of the striker arms to rotate the upright shaft from its neutral position and then passes by the one of the striker arms, the yieldable means in returning the upright shaft to its neutral position causes the striker arm to strike the second cam arm.

4,184,778

CUP FOR PAINT SPRAYER

Joseph L. Terrels, 111 S. Bolmar St., West Chester, Pa. 19380

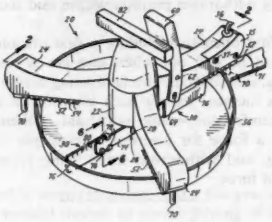
Filed Mar. 12, 1979, Ser. No. 19,302
Int. Cl.[2] B01F *7/22*
U.S. Cl. 366—250 **3 Claims**



1. A cup apparatus for use with a hand-held spray gun for spraying paint and similar material comprising a reservoir for said material, aspirator tube means connected to said spray gun and extending to the bottom of said reservoir, a cover assembly for said reservoir, said aspirator tube means rigidly mounting said cover assembly on said spray gun, means for rigidly mounting said reservoir on said cover assembly whereby said reservoir and cover assembly are supported by said hand-held spray gun, said spray gun having an air line for feeding compressed air to said gun, a manifold in said air line having a manually-operable valve and a branch conduit, a connector from said branch conduit to said cover assembly for admitting compressed air from said line to said cover assembly, valve means to regulate the air admitted to said assembly, said cover assembly including a generally cylindrical impeller chamber having a center line coincident with the center line of said cover assembly, means mounting an impeller for rotation about said center line within said impeller chamber including an upper bearing and a lower bearing, said lower bearing mounted in a depending boss disposed centrally of said cover assembly and having a bore open at its lower end into said reservoir, said impeller housing having discharge opening means in the upper wall thereof spaced circumferentially from said compressed air inlet thereto whereby said compressed air is discharged partially to said atmosphere through said discharge opening means after driving said impeller and is discharged partially into said reservoir through said lower bearing and bore, an agitator shaft mounted to said upper and lower bearings extending centrally through said impeller housing and comprising said means mounting said impeller in said housing for rotation about said central axis, said agitator shaft extending axially through said bore into said reservoir and terminating at its lower end in agitator blades adapted to sweep the bottom of said reservoir upon rotation of said agitator shaft, said agitator shaft having a fling wheel mounted thereon immediately below said boss within said reservoir and extending outwardly in a radial direction from said shaft adjacent said

boss so as to deflect paint splashing upwardly thereagainst outwardly by centrifugal action, said cover assembly including additional vent pipe means in the cover spaced diametrically from said aspirator tube and having a central bore extending upwardly through said cover, said bore communicating its lower end with said reservoir and at its upper end with the atmosphere whereby said reservoir is adapted to be vented to the atmosphere through the bore of said vent pipe means, thereby to maintain said reservoir at substantially atmospheric pressure, the atmospheric pressure in said reservoir being below the pressure of said impeller chamber whereby the air in said impeller tends to flow downwardly through said bearing and bore from said impeller chamber into said reservoir, and through said vent pipe means from said reservoir to atmosphere.

4,184,779
STIRRING DEVICE
Charles Detmer, R.R. 2, Box 241, Troy, Mo. 63379
Filed Sep. 22, 1978, Ser. No. 944,715
Int. Cl.[2] B01F *7/18*
U.S. Cl. 366—282 **10 Claims**



1. A device for automatically stirring the contents of a cooking utensil comprising a support having means to grip the side of the cooking utensil, an agitation means for extending into the cooking utensil, means to adjust said agitation means to fit various sized cooking utensils, means to drive said agitation means and thereby stir the contents of a cooking utensil including a motor mounted in an outer end of said support arm, a center housing, a drive shaft extending radially inward, a first drive gear mounted on the inboard end of said drive shaft, a second drive gear centrally disposed in said center housing, said second drive gear meshing with said first drive gear in a driving relationship, means defining a bore in said second drive gear, a bearing collar secured to said bore, said agitation means having a center post extending upwardly into said bearing collar, said bearing collar having means for engaging said center post in a driving relationship, and means to prevent rotation of said device about the cooking utensil as said agitation means is driven.

4,184,780
PRINTER
Toshio Kurihara, Tokorozawa; Nagao Mizutani, Hachiouji, and Yasuo Ohkawara, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Nov. 29, 1976, Ser. No. 745,979
Claims priority, application Japan, Nov. 29, 1975, 50-143051
Int. Cl.[2] B41J *3/12, 3/28, 11/20*
U.S. Cl. 400—56 **21 Claims**

1. A printer for printing on a recording medium including longitudinally folded bankbooks, laterally folded bankbooks and slips comprising:

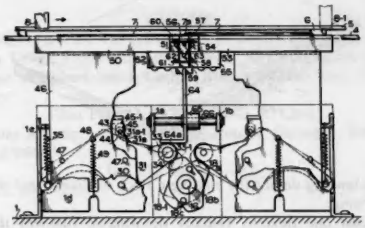
(a) a movable printing head for printing the surface to be printed of said recording medium;

(b) a movable platen provided on the side of said recording medium opposite said printing head;

(c) a supporting frame for supporting said printing head;

(d) positioning means mounted on said frame of said printer in parallel with a direction of movement of said printing head for maintaining the spacing between said surface to be printed of said recording medium and said printing head at a constant value;

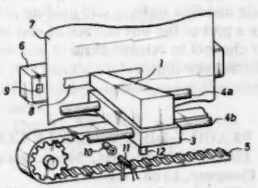
(e) platen supporting means including a plurality of parallel leaf springs secured to said frame for supporting said movable platen always in parallel with said recording medium;



(f) platen driving means for moving said movable platen toward and away from said positioning means by use of said platen supporting means; and

(g) platen control means operatively connected to said movable platen driving means for detecting the position of said movable platen and for stopping said platen driving means when the upper surface of said recording medium is pushed by said movable platen toward said positioning means and when said platen reaches a position spaced a predetermined distance from said positioning means.

4,184,781
DEFECT DETECTOR
Toshimichi Ota, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Apr. 10, 1978, Ser. No. 894,711
Claims priority, application Japan, Apr. 19, 1977, 52/44100
Int. Cl.[2] B41J *3/10, 29/46*
U.S. Cl. 400—124 **13 Claims**



1. In a dot printer employing a movable print head including movable print elements to effect printing paper, a printing platen located opposite said print head with said printing paper being located between said print head and printing platen, said print head movable across said platen from a home position to a right boundary position, an improvement comprising

a dot printer defect detector comprising

means for moving said movable print elements to their print positions;

means to sense the impact of said movable print elements moving to their print positions;

means to detect if any of said movable print elements fail to move to said print position; and

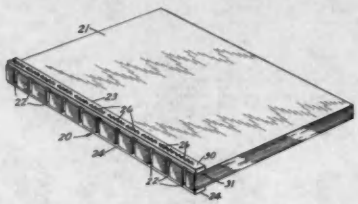
indicating means to indicate when any of said movable print elements fail to move to said print position.

4,184,782

BINDING DEVICE

Joe D. Giulie, Los Altos, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 29, 1976, Ser. No. 755,247
Int. Cl.[2] A46B 15/00
U.S. Cl. 402—15 15 Claims



1. A binding device for binding a stack of sheets, said device comprising:

at least one flexible, radially deformable filament that is generally nonextensible in a longitudinal direction under normal binding forces and does not have a significant cross-sectional area reduction under normal binding forces, said filament being adapted to engage a said stack of sheets;

at least one support member adapted to be positioned adjacent at least a portion of a said stack of sheets, said support member having a serpentine locking channel defined by:

opposed walls recessed from and intersecting a first surface of said support member, each of said opposed walls being shaped to provide a plurality of teeth having tips projecting toward the other of said opposed walls and being spaced to receive and radially deform a length of said filament inserted therebetween;

walls defining an inlet opening through said support member between one end of said locking channel and a second surface of said strip opposite said first surface, said inlet opening walls being disposed to guide said filament through said strip in a direction generally normal to said first surface and to afford bending of said filament at about a right angle at said inlet opening and positioning of the length of said filament in said channel; and

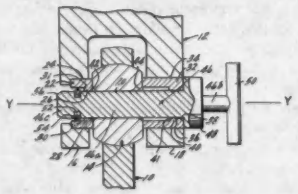
a guiding ledge projecting from one of said opposed walls and positioned adjacent said inlet opening, said guiding ledge having a contact surface generally parallel to and opposite said first surface, said guiding ledge positioned to engage a part of the side surface of said length of filament in said channel to retain a bend in said length of filament at said inlet opening.

4,184,783

READILY DISENGAGABLE CLEVIS

Gerald H. Hall, North Andover, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Apr. 26, 1978, Ser. No. 900,849
Int. Cl.[2] F16C 11/06; F16D 1/12; F16J 1/16
U.S. Cl. 403—157 8 Claims



1. A quick disconnect assembly for joining a first and a second member comprising:

(a) a first opening extending axially through a first leg of said first member,

(b) a second opening extending axially through a second leg of said first member, said second opening being axially aligned with said first opening;

(c) said second member having a third opening extending therethrough, said second member being positioned between said legs of said first member so that said third opening is axially aligned with said first and second openings;

(d) a pin receivable within each of said openings, said pin having a tip at one end and a head at the other end, said tip end being inserted into each of said openings from said second opening, said pin further having a groove near said tip end;

(e) a resilient member received in said groove;

(f) said first opening further including first means engageable by said resilient member to retain said pin in an inserted position within said first opening, said first means cooperable with said resilient member to require a force for withdrawing said pin from said first opening;

(g) said second opening further including second means engageable by said resilient member to retain said pin in a partially withdrawn position within said second opening; and

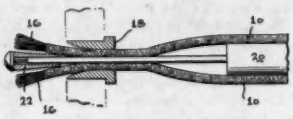
(h) said first opening including a first chamfer facing the head end of said pin when said pin is inserted in side opening, said first chamfer facilitating compression of said resilient member during each insertion of said pin, said first chamfer cooperable with said resilient member to require a force for insertion of said pin into said first opening, said withdrawal force being greater than said insertion force.

4,184,784

TERMINATION AND METHOD OF TERMINATING ROPES OR CABLES OF ARAMID FIBER OR THE LIKE

Bruce A. Killian, Van Nuys, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed Jul. 3, 1978, Ser. No. 921,547
Int. Cl.[2] F16G 11/05
U.S. Cl. 403—267 12 Claims



10. A termination for a cable of nonmetallic fiber having a plurality of braided strands comprising:

an annular collar member having an internal channel tapering outwardly toward the end of said cable,

reinforcing means for said braided strands including a short length of stranded nonmetallic fiber rope tapered in diameter from somewhat less than the diameter of said braided strands to zero positioned in the ends of each of said braided strands, the ends of the reinforced braided strands being separated into individual fibers and with the urethane matrix removed from said fibers,

a tapered tube of smaller maximum outside diameter than the internal channel of said collar concentrically positioned within said collar such that the maximum diameter portion of said tube is substantially concentric with the maximum internal diameter of said channel, and

a resin potting compound securing the ends of said braided strands concentrically between said tube and said channel and axially with braided portions of said reinforced strands also secured between said tube and said collar, such that tension forces on said braided strands tend to

wedge said strands and said potting compound more tightly between said collar and said tube.

4,184,785

AXIALLY BOLTED FLANGE JOINT

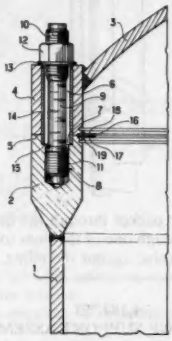
Jacques Marjollet, Paris, and Jean-Jacques Marsault, Meudon, both of France, assignors to Stein Industrie S.A., Villacoublay, France

Continuation of Ser. No. 733,945, Oct. 19, 1976. This application Mar. 17, 1978, Ser. No. 888,157

Claims priority, application France, Oct. 22, 1975, 75 32299

Int. Cl.[2] F16D *1/00*; F16L *23/00*

U.S. Cl. 403—337 **5 Claims**



1. An assembly comprising two plane flanges, said flanges having bores formed therein to permit joining of said flanges by studs received in said bores, the assembly including: sealing means having an inner lip weld formed in the plane of the joint of the flanges, being disposed inside of the inner periphery of the flanges and centering rings disposed around the studs in their respective bores.

4,184,786

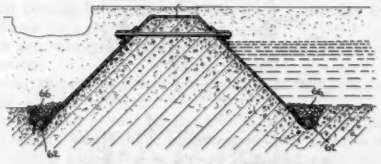
EARTH DAM PROTECTIVE COVERING

Charles D. Richards, P.O. Box No. 999, Middlesboro, Ky. 40965

Filed Mar. 6, 1978, Ser. No. 883,477

Int. Cl.[2] E02B *3/04, 7/02, 7/06*

U.S. Cl. 405—108 **10 Claims**



1. A protective external covering for earth dams, said protective covering being adapted to protect the earth dams from failure caused by overflow or internal erosion by providing an external overflow passage over the dam, separated from the surface of the dam, said protective covering comprising:

(a) a water impervious sheet which sheathes the crest and upstream and downstream faces of an earth dam, and

(b) anchoring means for securing the sheet to the dam and preventing the entry of impounded water between the sheet and the dam,

(c) the dimensions of the sheet exceeding the dimensions of the surfaces of the dam to be sheathed thereby,

(d) whereby the edges of the sheet are adapted to extend beyond said dam surfaces into trenches formed adjacent the dam,

(e) said edges of said sheet being secured in said trenches by said anchoring means,

(f) whereby the sheet is fixed against dislodgment from the dam,

(g) said sheet thereby sheating the dam and providing an external overflow passage over the dam, separated from the surfaces of the dam and facilitating overflow.

4,184,787

VIBRATION DEVICE FOR GROUND COMPACTING

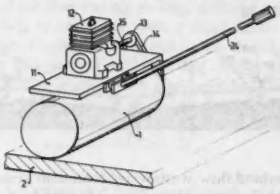
Phillip Uebel, Unterschleissheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 13, 1978, Ser. No. 877,351

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706667

Int. Cl.[2] E01C *19/38*

U.S. Cl. 404—117 **19 Claims**



1. In a vibratory compactor, a combination comprising a plate adapted to contact a substrate to be compacted; vibratory means mounted to said plate for vibrating the same and including imbalance means mounted for rotation in a predetermined path along guide means and about an axis substantially parallel to the general plane of said plate, at least a portion of said guide means having varying cross-section so that during at least a portion of each revolution the center of gravity of said imbalance means progressively moves between a first position in which it coincides with said axis and a second position in which there is a maximum distance between said center of gravity and said axis, and thereafter from said second position back to said first position; and drive means operatively related to said imbalance means for driving said imbalance means in rotation.

4,184,788

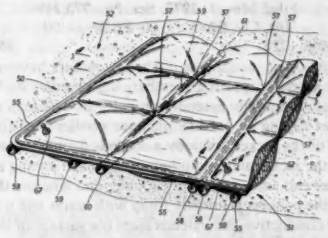
FORM FOR EROSION CONTROL STRUCTURES

Ervin R. Colle, Haddonfield, N.J., assignor to Raymond International, Inc., Houston, Tex.

Filed Oct. 18, 1976, Ser. No. 733,099

Int. Cl.[2] E02B *3/12*

U.S. Cl. 405—19 **28 Claims**



1. A form for erosion control structures suitable for use along a shoreline comprising;

at least two continuous sheets of flexible material joined about their entire periphery forming a space adapted to receive a flowable material therein;

first fluid transmitting means attached to one of said sheets about its periphery for equalizing hydrostatic pressure developing between the form and the surface upon which the form rests; and

second fluid transmitting means attached to the flexible sheet of material in contact with the surface upon which the form rests, said second fluid transmitting means being disposed in a fluid transmitting relationship to said first fluid transmitting means.

4,184,789

WASTEWATER TREATMENT SYSTEM

Louis C. Gilde, Jr., Moorestown, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Aug. 25, 1978, Ser. No. 936,739

Int. Cl.[2] A01G *25/00*; C02C *5/00*

U.S. Cl. 405—36 **26 Claims**

1. An overland flow wastewater treatment system comprising a treatment zone comprising a circular land surface area having impervious or relatively impervious soil, said land surface area comprising a plurality of concentric annular terraces, each of said terraces sloping gradually radially toward a concentric adjoining annular drain said terraces sloping alternately radially inwardly and radially outwardly, thereby creating a series of annular ridges and valleys in said treatment zone, a water-tolerant grass crop growing on said terraces, distribution means for applying wastewater to said terraces, said distribution means comprising a radially extending conduit pivotally secured at the center of said annular terraces and adapted for movement around said treatment zone, means for delivering wastewater under pressure to said conduit, and means on said conduit for distributing a substantially uniform quantity of wastewater to the grass crop on each of said terraces, the gradual slope of each of said terraces providing a slow movement of the wastewater through the grass crop toward the adjoining drain.

4,184,790

SUBMERGED PILE GROUTING

Max Bassett, Houston, Tex., assignor to C. Nelson Shield, Jr., Trustee, Houston, Tex.

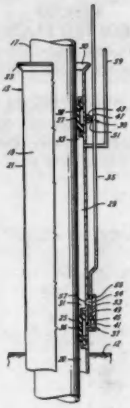
Filed Mar. 1, 1977, Ser. No. 773,149

Int. Cl.[2] E02B *17/00*; E02D *33/00*

U.S. Cl. 405—225 **35 Claims**

1. A method of grouting an offshore structure having at least one submerged supporting member, the member including a substantially vertically extending tubular jacket and a piling in said jacket having an outside diameter smaller than the inside diameter of the jacket whereby a space is formed between the inside of the jacket and said pilings; said space having a packer at its upper end and a packer at its lower end wherein the space between the packers is initially filled with water and wherein a first fluid conductive line extends from the surface of the water to and in fluid flow communication with the upper end of the jacket below the upper packer and a second fluid conductive line extends from the surface of the water to and in fluid flow communication with the lower end of the jacket above the lower packer, said method comprising the steps of:

A. setting the upper and lower packers;



B. testing the upper packer through the use of compressed fluid supplied through one of the lines to determine if the upper packer is sealed against the piling.

4,184,791

MINE ROOF SUPPORT ASSEMBLY

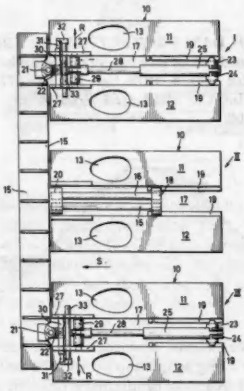
Kunibert Becker, Werl; Burghardt Elsner, and Günter Lagodka, both of Lunen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 856,077

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655076

Int. Cl.[2] E21D *15/44*

U.S. Cl. 405—291 **12 Claims**



1. A mine roof support assembly comprising three mine roof support units positioned side-by-side along a beam, the central unit being fastened to the beam at an invariant distance therefrom for movement therewith, each of the two outer units being connected to the beam adjacent to a respective end thereof by means of a respective guide rod assembly, each of the outer units being provided with an alignment device which acts on the beam, whereby the beam is displaceable in the direction of its longitudinal axis, each alignment device comprising an alignment ram whose piston rod carries a coupling

member which transmits force to the beam via the associated guide rod assembly, and wherein each coupling member is fixed to a respective push rod which is connected to the corresponding piston rod by means of a bridge member, each push rod being parallel to the associated piston rod.

4,184,792

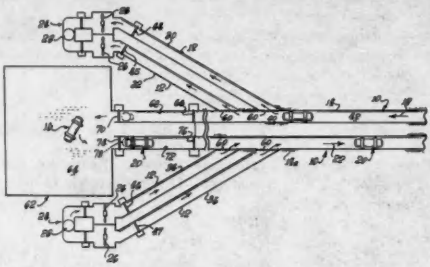
VACUUM-TUBE MASS-TRANSIT SYSTEM

August Z. Turnbo, 213 S. 4th St., Douglas, Wyo. 82633

Continuation-in-part of Ser. No. 745,589, Nov. 29, 1976, abandoned. This application May 1, 1978, Ser. No. 901,340

Int. Cl.[2] B65G *51/20*

U.S. Cl. 406—51 **15 Claims**



1. A vacuum, mass-transit system comprising:
at least one tubular conduit;
terminating ends disposed on opposite ends of said tubular conduit;
a vacuum-generating means located adjacent each terminating end of said tubular conduit, and arranged to communicate therewith;
a plurality of vacuum, flow-control means positioned between said vacuum generating means and said tubular conduit;
an unloading-and-loading terminal means disposed at each terminating end, and comprising a predetermined area having water disposed therein defining a moat to receive a vehicle therein;
at least one vehicle arranged to be moved linearly within said tubular conduit by said vacuum-generating means;
means to move said vehicles within said moat;
means to stop the forward motion of said vehicle prior to entering said unloading-and-loading terminal, said stop means being interposed between said terminating ends of said conduit and respective terminals thereof;
said stop means comprises a tubular section connected to said conduit arranged to be separately controlled from said vacuum generating means;
a first gate means allowing said vehicle to enter said tubular section;
a second gate means allowing said vehicle to enter said moat; and
water disposed in said tubular section whereby the linear motion of said vehicle is restrained, and wherein said vehicle is allowed to be moved from said water of said tubular section into said moat for loading and unloading.

4,184,793

DEVICES FOR THE REMOTE DISTRIBUTION OF MEASURED AMOUNTS OF POWDERY MATERIAL

Jean-Pierre Blatrix, Colombes, France, assignor to Societe Generale de Mecanique et de Metallurgie, Vanves, France

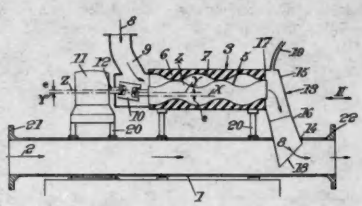
Filed Nov. 11, 1977, Ser. No. 850,533

Claims priority, application France, Nov. 23, 1976, 76 35224

Int. Cl.[2] B65G *53/48*

U.S. Cl. 406—61 **1 Claim**

1. A device for the remote distribution of measured amounts of a powdery material, comprising: a wall defining a transport duct having an axis, means for circulating a carrier fluid in said duct, a feed regulator mounted so as to feed into said duct said measured amounts and having an eccentric screw pump with an outlet, a pouring spout having an upstream end connected to the pump outlet and a downstream discharge end disposed inside the duct, the spout being downwardly turned and plunging laterally into the transport duct through an opening provided in the upper wal thereof with the spout downwardly



converging in the shape of a truncated cone, the downstream discharge end of the duct having an edge defining a discharge opening extending in an ellipse with a small horizontal axis situated in a plane sloping with respect to the axis of the duct, said horizontal axis passing through said ellipse and being surrounded over the whole of its periphery by the flow of carrier fluid, and the carrier fluid being admitted axially into the duct upstream of said opening.

4,184,794

DEVICE FOR MACHINING THE INTERNAL WALL OF A CYLINDER

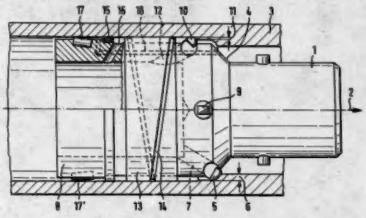
Franz Henninghaus, Dormagen, Fed. Rep. of Germany, assignor to Ferdinand Henninghaus, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 7, 1978, Ser. No. 894,503

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715945

Int. Cl.[2] B23B *27/10*; B21C *37/30*

U.S. Cl. 408—57 **10 Claims**



1. A draw boring head including a cutter mounting portion of substantially constant diameter, a shank portion of reduced diameter compared to said cutter mounting portion, a tapered transitional zone between said cutter mounting portion and said shank portion, a deep bore cutting bit located at a juncture between said cutter mounting portion and said transitional zone, supporting blocks radially oriented to counteract the components of cutting forces and a pairing bit located between said supporting blocks in a position trailing and angularly offset from said deep bore cutting bit.

4,184,795

BORING TOOL

Glenn D. Medlin, P.O. Box, Mt. Pleasant, N.C. 28124

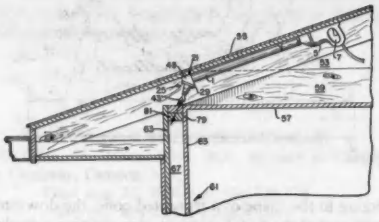
Filed Mar. 1, 1978, Ser. No. 882,365

Int. Cl.[2] B23B *45/14*

U.S. Cl. 408—127 **3 Claims**

1. A boring tool adapted for operation in a limited attic space

to bore angular access holes in plates fixed adjacent to the top of an exterior hollow wall of a building, including an elongated linearly extending handle, a drive shaft rotatably housed in said handle and power means for driving said shaft, an operating head formed in two parts, one of said parts housing one component of a universal joint and said one component being connected to the drive shaft and rotated thereby, the other part of said operating head housing the other component of said universal joint and said other component being operatively connected to and rotated by said one component, said other component provided with a recess therein, a twist bit removably received in said recess, and said one part of said operating head being of generally triangular configuration, an angle imparting means provided on said one part of said operating head, said other part of said operating head being removably affixed to said one part of said operating head, and said angle imparting means imparting to said second part and said twist bit an angularity relative to said handle.

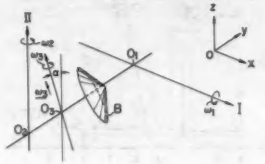


4,184,796

GLOBOID WORM GEAR GENERATING METHOD

Takao Sakai, 2-5, Nankodai-2-chome, Izumi-shi; Minoru Maki, 2-3, Nishinodaira, Nagamachi, Sendai-shi, and Hisashi Tamura, 104-3, Kamijomachi, Nagaoka-shi, all of Japan

Filed Jun. 21, 1977, Ser. No. 808,521
Claims priority, application Japan, Jun. 22, 1976, 51-72808
Int. Cl.[2] B23F *11/00, 13/06*
U.S. Cl. 409—12 **4 Claims**



1. A method for generating globoid worm gears consisting of a worm rotating at an angular velocity ω_1 and a worm wheel rotating in engagement with said worm at an angular velocity ω_2 about an axis perpendicular to and spaced apart by a distance from the axis of said worm, said method comprising the steps of:

(a) preparing a machining tool having at least one conical generating surface whose semivertical angle Y is $0° \leqq Y \leqq 90°$ and whose major axis is inclined at an angle δ, which is $-60° \leqq \delta \leqq 60°$, with respect to a plane perpendicular to the axis of said machining tool;

(b) disposing said machining tool in such a way that the axis of said machining tool meets at right angles with a common perpendicular between the axes of said worm and said worm wheel at a position spaced apart from the axis of said worm by a distance e1, which is $\leqq e$, and is inclined at an angle α with respect to the axis of said worm wheel, said angle α being determined from an equation $e_1 = e \cos^2 \alpha$;

(c) rotating a worm blank about the axis of said worm at said angular velocity ω_1;

(d) rotating said machining tool about the axis thereof at an angular velocity ω_3 while displacing said machining tool in the axial direction thereof at a translation velocity ω_3 thereby moving said conical generating surface along a helical path about the axis of said machining tool to generate a worm tooth surface on said worm blank with said conical generating surface, said angular velocity ω_3 being determined from an equation $j = i \cdot \cos \alpha - \sin \alpha$ where $i = \omega_1/\omega_2$ and $j = \omega_1/\omega_3$, and said translation velocity ω_3 being determined from an equation $\omega_3 = e \cdot \omega_3 \cdot \sin\alpha \cdot \cos\alpha$;

(e) preparing a hob corresponding to said generated worm;

(f) rotating a worm wheel blank about the axis of said worm wheel at said angular velocity ω_2; and

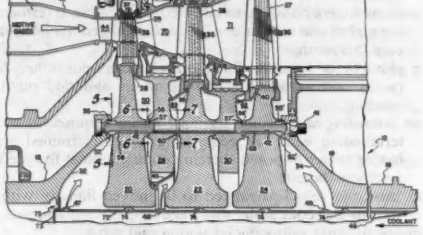
(g) rotating said hob about the axis of said worm at said angular velocity ω_1 thereby directly generating a worm wheel tooth surface on said worm wheel blank.

4,184,797

LIQUID-COOLED TURBINE ROTOR

Rodger O. Anderson, Scotia, and Arthur J. Piekarski, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 17, 1977, Ser. No. 842,407
Int. Cl.[2] F01D *5/18*
U.S. Cl. 416—95 **8 Claims**



1. In a gas turbine including a casing, a shaft rotatably supported in said casing, a turbine disc mounted on said shaft and turbine buckets mounted on the outer rim of said disc and extending radially outwardly therefrom, said buckets having internal coolant passages and said disc having coolant channels through the outer rim which communicate liquid coolant to said buckets, an arrangement for supplying liquid coolant to said buckets comprising:

(a) a flange on said shaft extending radially outwardly from said shaft and adjacent to said disc;

(b) said shaft including an axially extending passage for liquid coolant and including openings adjacent said flange for discharging coolant from said axially extending passage onto said flange;

(c) said flange directing the coolant, under influence of centrifugal force, radially outwardly toward said disc;

(i) said flange having a plurality of circumferentially disposed apertures;

(ii) said disc having a plurality of apertures aligned with said apertures in said flange;

(d) said disc including means for passage of coolant from said flange to said outer rim channels; and

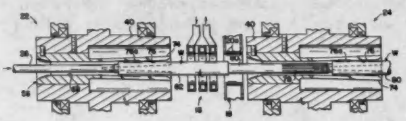
(e) a plurality of bolts extending longitudinally through said apertures for securing said disc to said flange in abutting contact, said bolts being fluted to provide a plurality of axial passages forming a portion of said means for passage of coolant.

4,184,798

WORKPIECE ROTATING AND FEEDING APPARATUS

John R. Laughlin, Brecksville, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Jan. 23, 1978, Ser. No. 871,329
Int. Cl.[2] B23Q 5/22
U.S. Cl. 414—16 8 Claims



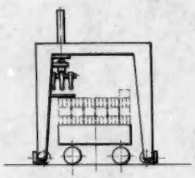
1. Apparatus for rotating and axially feeding an elongated varying diameter workpiece in a given direction along a path comprising, axially fixed rotatable collet means having axially extending radially inwardly and outwardly displaceable finger means, said collet means having a free radially variable workpiece receiving passageway therethrough defined by said finger means, said finger means being biased to continuously radially engage and slidably support a workpiece of varying diameter received in said passageway, means to continuously rotate said collet means for a workpiece in defined by said passageway to be continuously rotated by said finger means, and pusher means separate from said means to rotate said collect means to move said workpiece through said passageway in said given direction and relative to said rotating finger means.

4,184,799

SETTING AND STACKING ARRANGEMENT

Moritz Arndt, Trier, Fed. Rep. of Germany, assignor to Laeis-Werke AG, Trier, Fed. Rep. of Germany

Filed Jan. 9, 1978, Ser. No. 867,879
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1977, 2700695
Int. Cl.[2] B65G 57/03
U.S. Cl. 414—54 14 Claims



1. An improved setting and stacking arrangement including a gripping mechanism movably mounted in said arrangement in a transverse and longitudinal direction and up and down in a vertical direction and rotatably about a vertical axis for gripping, setting and stacking articles in a cross-bracing manner, particularly molded articles being supplied from a ceramic press, the improvement in said arrangement comprising

at least one first guide rod operatively mounted in said arrangement,

at least one pair of gripper arms slidably movably mounted on said first guide rod,

at least one rotary gripper plate respectively operatively mounted at the free end of one arm of said pair of gripper arms, and

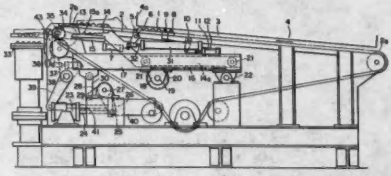
rotary drive means operatively connected to said rotary gripper plate for rotating same about a preselected angle, said first guide rod being pivotally mounted in said automatic setting and stacking arrangement.

4,184,800

STEEL SHAPE STACKING APPARATUS

Tsutomu Uchida, Matsudo; Zenichi Ono, Kawaguchi; Makoto Nagashima, Ageo; Eiji Tasaka; Shigeo Mitsui, both of Kawaguchi, and Keiichi Nomura, Urawa, all of Japan, assignors to Toshin Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 721,585, Sep. 8, 1976, Pat. No. 4,109,801. This application Jun. 14, 1978, Ser. No. 916,044
Claims priority, application Japan, Sep. 10, 1975, 50-108873
Int. Cl.[2] B65G 57/04
U.S. Cl. 414—56 1 Claim



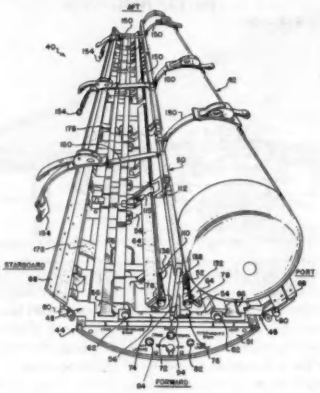
1. An apparatus for automatically stacking steel shapes: which comprises, in combination, an endless conveyor running upwardly-obliquely in the travelling direction at a specific gradient angle with respect to the horizontal plane and driven by driving means for conveying steel shapes transversely placed on said conveyor; an overlap-protecting member disposed above and along said conveyor to form a passage therebetween for permitting steel shapes to pass without being overlapped; a stand-by stop member adapted to project into said passage for stopping said conveyed steel shapes at an intermediate part of said passage and then to retract from said passage for advancing said stopped steel shapes; assorting stop means adapted to project into said passage at a position upstream of said stand-by stop member and then to retract from said passage, said assorting stop means having at least one projecting front head adapted to be firmly engaged with the internal surface of a steel shape, said projecting head being attached as an attachment in a positionally adjustable manner so as to be adjusted when steel shapes of a different size and number are handled, timing of the projection and retraction of said assorting stop means being correlated to timing of the projection and retraction of said stand-by stop member so that upon aligned-stop of a group of steel shapes of a predetermined number by projection of said stand-by stop member said assorting stop means is projected to stop the steel shape just succeeding to said group of steel shapes and said stand-by stop member is retracted to advanced said group of steel shapes, and upon completion of advancement of said group of steel shapes said assorting stop means is retracted and said stand-by stop member is projected; a takeout stop member for stopping temporarily said advanced group of the steel shapes at a take-out position; stacking lifter means disposed at a position downstream from said conveyor; stacking lever means adapted to lift said group of steel shapes stopped by said take-out stop member from said conveyor to a level above said stacking lifter, said lever means being adapted to carry out quick retraction and lowering to its original position after lifting of said group of the steel shapes on the stacking lifter means; and driving means for correlating and synchronously driving said stand-by stop member, assorting stop means take-out stop member, and said stacking lever means so as to repeat their correlated foregoing operations.

4,184,801

DUAL LOADING AND STOWAGE APPARATUS

Nicholas Nicoloff, San Diego, and Eugene B. Osuch, La Jolla, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1978, Ser. No. 916,413
Int. Cl.[2] B66F 7/02
U.S. Cl. 414—608 **27 Claims**



1. An apparatus for handling, stowing, and off loading a pair of cylindrical bodies comprising:

an elongated base;

a pair of elongated trays positioned side by side above the base and parallel thereto for receiving the cylindrical bodies;

means slidably mounting the trays for lateral movement on the base so that each tray can be selectively centered above the base for off loading purposes;

each of said trays being pivoted to the mounting means along an inner edge of each respective tray so as to be capable of pivoting between downward and upward positions; and

the lateral dimension of the pair of trays in their downward positions being greater than the lateral dimension of the base, but when one of the trays is pivoted to its upward position the lateral dimension of the trays being less than the lateral dimension of the base;

whereby after unloading one of the cylindrical bodies from the apparatus, the unloaded tray can be pivoted upwardly and the loaded tray can be moved inwardly until the lateral space taken by the apparatus is minimized.

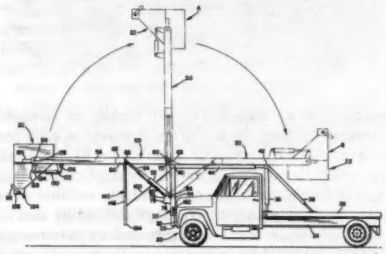
4,184,802

FRONT LOADER VEHICLE FOR LOADING AIRCRAFT

Richard J. Cook, Hayti, and Richard Reade, Caruthersville, both of Mo., assignors to Mid-Continent Aircraft Corporation, Hayti, Mo.

Filed Nov. 25, 1977, Ser. No. 854,683
Int. Cl.[2] B66F 9/00
U.S. Cl. 414—680 **8 Claims**

1. A front loader vehicle for loading particulate materials into material dispensing aircraft for uses such as seeding, crop dusting, fire fighting, and forest defoliation, including a truck vehicle having integral frame structure with front and rear frame portions; a boom support structure having front and rear vertical support members rigidly secured, respectively, to said front and rear frame portions; a boom structure; means pivotally mounting one end of said boom structure to the front vertical support members of said boom support structure to permit swinging of said boom to positions between a forward projection thence up over the truck to a position extending back over the rear portion of the boom support structure; power means and controls therefor for pivoting the boom structure to any position between the forward and rearward positions; a hopper pivotally mounted on a horizontal axis at the other end of said boom structure; and improved structure comprising: link means including a self-contained extensible motor unit connected at one end to said hopper and at the other end to said beam; power means with controls to extend and retract said motor unit to provide level control of the tilt of said hopper; a bottom discharge port for said hopper, a



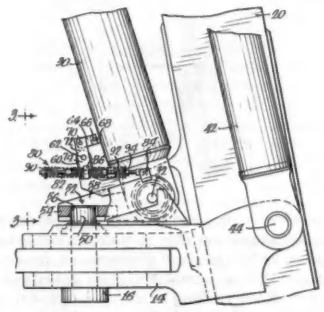
discharge valve means aligned with said discharge port and controls to move said discharge valve means between open and closed conditions; abutment means secured on said front vertical support members; and a safety bar assembly pivotally mounted at one end on said boom structure and having its other end adapted to cooperate with and abut said abutment means on said support frame to block the forward and downward limit position of said boom structure at specific desired limit positions.

4,184,803

RELEASABLE BACKHOE BOOM LOCK

Richard D. Housman, Mediapolis, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Mar. 8, 1978, Ser. No. 884,699
Int. Cl.[2] E02F 3/32
U.S. Cl. 414—694 **6 Claims**



1. In an earthworking implement having a boom pivoted on a frame about a horizontal pivot axis, a material handling unit pivoted intermediate opposite ends on an outer free end of said boom by a fluid ram unit having one element pivotally connected to said material handling unit at one free end thereof and a second element pivoted on said boom adjacent said frame, and releasable lock means for locking said boom on said frame to prevent pivotal movement about said horizontal pivot axis, the improvement of said releasable lock means comprising a first member on said frame and a second member pivoted on a common pivot axis with said second element on said boom, and a linkage between said fluid ram unit and said second

member, said linkage including at least a first link pivoted on said fluid ram unit adjacent said frame and interconnection means between said first link and said second member causing said second member to pivot away from said first member when said fluid ram unit is actuated and pivots away from said boom to release said lock means.

4,184,804

ROTARY ELECTRIC MACHINE HAVING A COOLING FAN

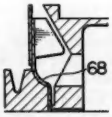
Mitsuo Inagaki; Hideaki Sasaya, and Takashi Kurahashi, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 720,390, Sep. 3, 1976, abandoned. This application Jun. 19, 1978, Ser. No. 916,537

Claims priority, application Japan, Oct. 10, 1975, 50-138925[U]; Jan. 20, 1976, 51-5492[U]

Int. Cl.[2] **F04D** *17/00;* **H02K** *9/06*

U.S. Cl. 415—213 R **3 Claims**



1. In a rotary electric machine having means for cooling said machine,

which includes:

a stator housing having an annular front end wall provided with at least one air-ventilating passageway opening generally axially therethrough radially offset somewhat from centrally of said annular front end wall, said annular front end wall coaxially having a generally radially extending annular front wall surface extending radially beyond said at least one air-ventilating passageway and defining one axial extreme of a gap means for channeling ventilating air generally radially outwards once such air has issued from within said housing via said at least one air-ventilating passageway; and

which further includes a fan mounted on a rotor shaft mounted coaxially relative to said housing annular front end wall for rotation in generallyconfronting relation with said housing annular front end wall, said fan including a generally disk-shaped base plate having an axially rear surface with a first, radially inner coaxially annular portion and a second, radially outer coaxially annular portion, said fan base plate rear surface confronting said housign front end wall with axial spacing therebetween and defining another axial extreme of said gap means for channeling ventilating air generally radially outwards once such air has issued from within said housing via said at least one air-ventilating passageway; said fan further including a plurality of fan blades based in a coaxial ring on said fan base plate rear surface second, radially outer coaxially annular portion; each such fan blade being at least generally planar, extending at an angle to radially of said base plate and at least generally axially towards said housing front wall annular front surface within the radial extent of said housing front end wall annular front surface; each fan blade having a radially outer edge, a radially inner edge, and an axially rear edge which extends between said radially inner and outer edges; the fan blade axially rear edges lying at least generally parallel to said housing front end wall annular front surface and in axially spaced confronting relation therewith, so that as said fan is rotated upon said rotary shaft air is drawn out of said housing through said at least one air-ventilating passageway, and is vented via said gap between said housing front end wall annular front wall surface and said fan base plate rear surface, the improvement wherein:

(a) each fan blade gradually decreases in width, measured axially of the rotary electric machine, as each blade extends radially outwardly, so that as seen in side elevation, the radially outer edge of each fan blade is narrower than the radially inner edge thereof, and the axially near edge thereof is disposed obliquely;

(b) each fan blade radially outer edge as seen in the side elevation of such fan blade, is of somewhat smaller diameter than said fan base plate, so that an annular rim region of said base plate is defined, which rim region lies axially outwardly of said ring of fan blades to the outer peripheral extent of said base plate;

(c) said housing front end wall annular front wall surface second, radially outer coaxially annular portion radially coextends with both said ring of fan blades and said annular rim region of said fan base plate, thereby defining with said rim region a diffuser for ventilating air issuing radially outwardly of said gap;

(d) said annular front wall surface being of concave at least generally conical curvature; and

(e) the product of the width of said gap at any selected radius within the radial extent of said ring of fan blades and the circumference of said gap at said radius being substantially constant for all radii within said radial extent of said ring of fan blades.

4,184,805

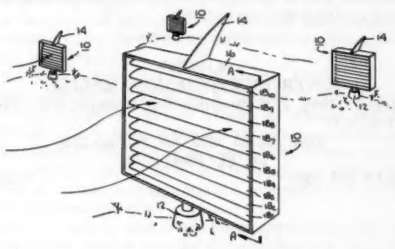
FLUID ENERGY CONVERTING METHOD AND APPARATUS

Lee Arnold, 177 E. 77th St., New York, N.Y. 10021

Filed Mar. 9, 1978, Ser. No. 884,816

Int. Cl.[2] **F03D** *5/06*

U.S. Cl. 416—1 **33 Claims**



1. A method for converting the kinetic energy of a fluid stream into useful work comprising the steps of positioning a device including a pair of parallel plates and a thin airfoil equally spaced from each plate and having at least two degrees of freedom within a moving fluid stream with the plates parallel to the free stream and the airfoil at zero angle of attack when undisturbed to define an aerodynamic system, adjusting the system until the velocity of the fluid is sufficient to induce flutter oscillations, disturbing the airfoil, and then utilizing the resultant oscillations to produce useful work.

4,184,806

PUMPING EJECTOR

Michel Prinz, Saint Cyr l'Ecole, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 3, 1978, Ser. No. 883,266

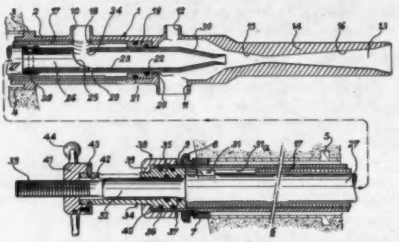
Claims priority, application France, Mar. 16, 1977, 77 07819

Int. Cl.[2] **F04F** *5/44*

U.S. Cl. 417—160 **5 Claims**

1. A pumping ejector comprising a fixed tubular ejector body traversing the wall of a protective cell, said body having in its part which projects into the cell an extension equipped with a first lateral connection for the admission of a pumping steam flow, a second lateral connection connected to a pipe for admitting a fluid to be pumped and an axial diffuser for the

discharge of said fluid which is shaped in convergent-divergent manner and a tube fitted in the body behind the diffuser having an intake port for the flow of steam introduced into the body by the first lateral connection and having at its end facing the diffuser a nozzle for accelerating the steam in order to entrain the fluid to be pumped, the tube carrying the nozzle being extended in the body, at the opposite end to the diffuser, up to the outside of the wall of the cell by a shaft associated with means for controlling its displacement in the body in



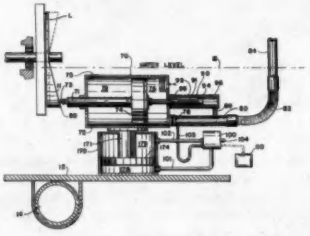
order to vary the relative position of the nozzle up to an end position where the tube abuts against the diffuser blocking the outflow of the fluid to be pumped, wherein the ejector body comprises downstream of the first connection with respect to the outflow direction of the stream in the tube a third lateral connection for the independent admission of a separate steam flow communicating with the second lateral connection whatever the position of the nozzle in the body, said third lateral connection admitting a separate cleaning stream flow when the nozzle occupies said end position.

4,184,807

REVERSIBLE HYDRAULIC ENGINE

George W. Berg, 2221 Northfield Rd., Nanaimo, B.C., Canada (V9S 3C3)

Filed Jul. 10, 1978, Ser. No. 923,251
Int. Cl.[2] F04B *17/00*
U.S. Cl. 417—334 **5 Claims**



1. An engine for producing power from the flow of water comprising,

a set of paddles, means to cause rotation of a shaft when the paddles are moved by engagement of some of the paddles with a stream of flowing water,

a cam wheel mounted on said shaft and engaged to a cam follower fastened to a piston of a hydraulic cylinder,

said hydraulic cylinder fitted with first valve means to draw water into a cylinder chamber when the piston is moved in a first axial direction and fitted with second valve means to conduct the water in the cylinder under pressure to a vertical outlet when the piston is moved in a second axial direction;

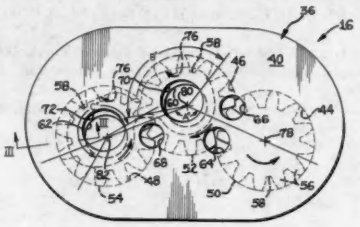
said paddle and hydraulic cylinder mounted on a floatable frame.

4,184,808

FLUID DRIVEN PUMP

Delwin E. Cobb, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 9, 1977, Ser. No. 849,819
Int. Cl.[2] F04B *17/00, 9/10;* **F01C** *1/18;* **F03C** *3/00*
U.S. Cl. 417—348 **16 Claims**



1. A fluid driven pump comprising:

a housing defining first, second and third cavities and an inlet port located intermediate said first and second cavities;

first, second and third spur gears each having a plurality of external gear teeth and each positioned in a respective one of the cavities, said first and second spur gears being rotatably connected one to the other and said second and third spur gears being rotatably connected one to the other;

fluid means connected to said housing at said inlet port for solely rotating said first and second spur gears at the point of opening separation of said gear teeth of said first and second spur gears, said third spur gear being driven by said second spur gear; and

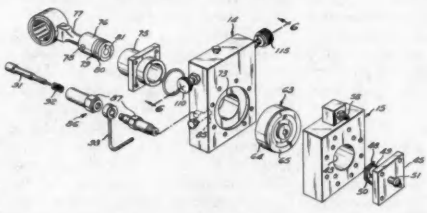
passage means in said housing for drawing a fluid into said housing and expelling said fluid from said housing in response to intermeshing rotation of said spur gears.

4,184,809

DIAPHRAGM PUMP CONSTRUCTION HAVING PULSATOR PISTON AND MECHANICALLY ACTUATED MEANS TO SUPPLY PULSATOR FLUID

Zar W. Kelley, Broadview Heights, Ohio, assignor to Louis Beck, Seven Hills, Ohio

Filed May 11, 1977, Ser. No. 795,957
Int. Cl.[2] F04B *9/08, 35/02*
U.S. Cl. 417—360 **9 Claims**



1. A piston diaphragm pump comprising a crankcase defining a reservoir for driving fluid, a crankshaft rotatably journaled in said crankcase, said crankshaft including a crank, said crankcase having a front wall and a mounting hole in said front wall, a housing having a driving fluid chamber adjacent said front wall and overlying said mounting hole, said housing having a driven fluid chamber and a flexible diaphragm separating said chambers from one another, inlet and outlet passages extending between said crankcase and said driving fluid chamber for circulating said driving fluid between said reser-

voir and driving fluid chamber, said inlet and outlet passages both extending through said front wall of said crankcase, a piston mounted on said housing for reciprocating movement relative to said driving fluid chamber to provide a suction stroke and a pressure stroke, a connecting rod connecting said piston and said crank, said piston being axially aligned with and extending through said mounting hole, a valve disposed in said inlet passage and a spring biasing said valve to a normally closed position, mechanical means engaging said valve and moving said valve from said closed position against the bias of said spring to an open position for passage of said driving fluid from said reservoir to said driving fluid chamber during said suction stroke of said piston, and said mechanical means extending through said mounting hole.

4,184,810

COMPRESSOR UNIT, PARTICULARLY FOR REFRIGERATORS

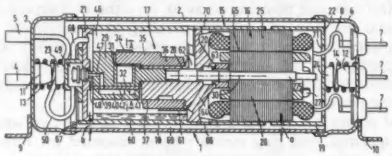
Jan Dyhr, Sonderborg; Bent Karll, Augustenborg, and Hans C. Andersen, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Feb. 27, 1978, Ser. No. 881,398

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2709002

Int. Cl.[2] F04B *35/04, 19/02*

U.S. Cl. 417—363 **13 Claims**



1. A compressor assembly, comprising, an electric motor having a stator and a rotor, housing means comprising inner and outer casing means with said inner casing means being attached to said stator, said inner casing means being resiliently mounted relative to said outer casing means and there being formed therebetween a first gas inlet chamber, shaft means for said rotor, bearing means fixed relative to said inner casing for journaling said shaft means, a compressor inside said inner casing having a cylinder block attached to said shaft means for rotation with said rotor, a second inlet gas chamber inside said inner casing in surrounding relation to said cylinder block, said cylinder block having a cylinder extending transversely relative to the axis of said shaft means, a piston in said cylinder, circular track means fixed relative to said inner casing and eccentrically disposed relative to the axis of said shaft means, guide means cooperable with said track means and said piston to cause reciprocation of said piston in synchronism with the rotation of said shaft means, intake and exhaust passage means in said cylinder block with said exhaust passage means having a terminal section coaxially aligned with the axis of said shaft means, said inner casing having end wall means, sealing means cooperable with said end wall means and said cylinder block, an antechamber wall attached to said inner casing wall means in surrounding relation to said sealing means and forming an antechamber between said first and second chambers, said antechamber having fluid communication with said exhaust passage terminal section, first and second exhaust port means in said outer casing means and said antechamber wall, and conduit means between said first and second exhaust port means.

4,184,811

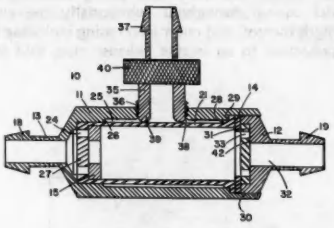
FLEXIBLE-WALL FUEL PUMP WITH MEANS TO DAMPEN WALL OSCILLATIONS

Maynard W. Schade, Rte. 1, 1311 Co. Tk. Hwy., Edgerton, Wis. 53534

Filed Apr. 6, 1977, Ser. No. 785,289

Int. Cl.[2] F04B *43/10, 45/06*

U.S. Cl. 417—394 **4 Claims**



1. A fuel pump self-compensated for changes in fuel head pressure for use with two stroke cycle engines comprising in combination:

(a) a relatively rigid shell-like body member,

(b) a resileintly expansible diaphragm disposed within said body member wherein said diaphragm defines a spacial confine which is variably expandable and contractable responsively to differential fluid pressure acting thereon,

(c) first check valve means porting sad confine defined by said diaphragm,

(d) second check valve means porting said confine defined by said diaphragm,

(e) a volume confined by said body member and interspaced between a preponderant portion of said diaphragm and said body member,

(f) mechanical damper means adjustably retained by said body member for being set to project fixedly through varying distances into said volume to contact said diaphragm and produce deflection therein proportionate to the amplitude through which said spacial confine is variably driven in expansion by said fluid pressure differential, thereby to dampen expansion and contraction oscillations of said spacial confine,

(g) an opening provided in said body member for communicating said volume with the enironment of the crankshaft to an engine to which said fuel pump may be attached for use, thereby to provide pulsated drive operation of said diaphragm.

4,184,812

EXHAUST GAS TURBINE SUPERCHARGER

Jiro Nomura; Hiroshi Nakatomi, and Yoshikatsu Yuasa, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1977, Ser. No. 821,313

Claims priority, application Japan, Aug. 3, 1976, 51-92045

Int. Cl.[2] F04B *35/00;* **F01D** *25/24*

U.S. Cl. 417—407 **1 Claim**

1. An axial flow gas turbine supercharger comprising:

a rotor shaft mounted for rotation and having first and second opposite ends;

a blower impeller fixed to said first end of said rotor shaft;

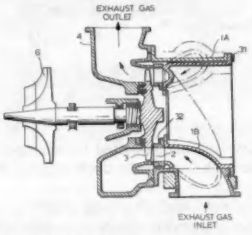
turbine blades fixed to said second end of said rotor shaft;

at least one turbine nozzle positioned axially adjacent said turbine blades on the side thereof facing away from said impeller;

exhaust gas inlet casing means positioned for directing inlet exhaust gas from an engine exhaust axially through said at least one nozzle and then axially between said turbine blades, thereby rotating said turbine blades, said rotor shaft and said impeller;

exhaust gas outlet casing means positioned axially between said turbine blades and said impeller for receiving said inlet exhaust gas after passage thereof between said turbine blades and for discharging said inlet exhaust gas; and

said exhaust gas inlet casing means comprising a fixedly positioned cylindrical outer inlet casing and a cylindrical inner inlet casing dimensioned to be axially slidably inserted into and removed from the interior of said outer inlet casing, said outer inlet casing enclosing said inner inlet casing throughout substantially the entire axial length thereof, said outer inlet casing including means for connection to an engine exhaust pipe, said inner inlet



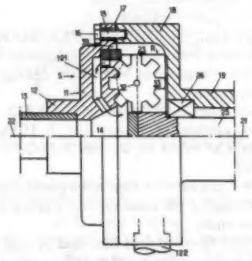
casing being free of direct connection to the engine exhaust pipe, means for attaching said at least one turbine nozzle to the axially inner end of said inner inlet casing, and means for connecting said inner and outer inlet casings when said inner inlet casing is axially inserted into said outer inlet casing, whereby said at least one turbine nozzle may be disassembled from said supercharger by removing said connecting means and then axially removing as a unit said inner inlet casing and said at least one turbine nozzle from the interior of said outer inlet casing, without disconnecting said outer inlet casing from the engine exhaust pipe.

4,184,813

FLUID ROTATING MACHINE WITH MULTIPLE DISPLACEMENT

Eugeniusz M. Rylewski, 43 bis, Avenue du Gal Leclerq, 78470 St. Remy les Chevreuse, France

Filed Jan. 12, 1976, Ser. No. 648,200
Claims priority, application France, Jan. 17, 1975, 75 01551
Int. Cl.[2] F04B *49/00;* **F01C** *21/12, 1/08;* **F04C** *29/08*
U.S. Cl. 417—440 **2 Claims**



1. In a positive-displacement rotative machine in which the conversion of pressure energy of fluids is obtained by the circulation of at least two spaced vane members in at least one spiral-like passage of revolution defined by rib members having top surfaces and side walls, wherein

said vane members are parts of at least two vane wheels, each of said vane wheels is mounted for rotation about its own axis and housed in a slot formed in a first part of said machine,

said vane members circulate in said at least one spiral-like passage of revolution formed in a plate member comprising a second part of said machine,

at least one of said first and second parts of said machine is rotatable, the axis of rotation thereof constituting the main axis of rotation of said machine,

the axes of rotation of each of said vane wheels are transverse to said main axis of rotation of said machine,

said at least one spiral-like passage of revolution is generated by a combined rotation of said vane members about the axis of rotation of their respective vane wheels and by rotation of said first part of said machine in relation to said second part of said machine,

said at least one spiral-like passage is bound along its intermediate portion by a pair of said rib members while each end extremity portion thereof is bound by a single rib member,

said intermediate portion of said at least one spiral-like passage is closed against the top surfaces of said rib members by a cooperating surface formed on said first part of said machine receiving said vane wheels in sliding contact therewith to thereby form channels for the circulating fluid, and

said at least one spiral-like passage extends between a central inlet chamber and a peripheral outlet chamber formed in said plate member for the circulating fluid and has a continuous progressively varying cross-sectional area from the inlet to the outlet thereof,

the improvement therein which comprises:

means for selectively communicating the peripheral outlet chamber of said at least one spiral-like passage with either the discharge flow or the inlet flow of the fluid circulating through said machine so as to vary the displacement of said machine, said means operating to diminish the displacement of said machine when said peripheral outlet chamber is in communication with said inlet flow by returning fluid to said inlet chamber without an increase in the pressure of the fluid flow,

said means comprising a ring member having two sets of openings, said ring member being mounted for rotation relative to said plate member comprising said second part of said machine and facing the peripheral outlet of said at least one spiral-like passage, one of said two sets of openings of said ring member adapted to communicate with the discharge flow of the fluid circulating through said machine and the other of said two sets of openings of said ring member adapted to communicate with the inlet flow of the fluid circulating through said machine.

4,184,814

VALVE GUIDE FOR POPPET VALVE

Curtis J. Parker, Orangefield, and Kenneth H. McGill, Beaumont, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 698,574, Jun. 22, 1976, abandoned.
This application Mar. 23, 1978, Ser. No. 889,318
Int. Cl.[2] F04B *39/14*
U.S. Cl. 417—454 **7 Claims**

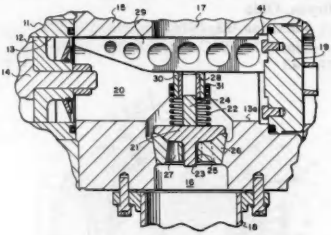
1. In a reciprocating pump having a housing with a fluid end including a piston mounted in a piston chamber and with a reciprocating spring biased stemmed valve therein arranged for alternately communicating discharge and suction pressures with a pumped fluid chamber formed by a longitudinal extension of said piston chamber, a valve guide assembly, comprising:

an annular ledge in said housing around and radially outward of said valve;

a support plate being an elongated, substantially flat and of a generally rectangular cross-section extending transversely across a mid portion of said pumped fluid chamber and having arcuate end portions extending in a downward

direction toward said valve with ends thereof abutting said ledge at opposite sides of said valve within said pumped fluid chamber;

a valve guide mounted transversely through a mid portion of said support plate to slidably receive and mount the stem of a valve member through a lower side portion thereof; and



a support bar wedged between an upper side portion of said valve guide and a wall surface of said pumped fluid chamber, said support bar being adapted to retain said support plate in tight abutment with said ledges in order to retain a reciprocating valve member and the associated spring thereof in a valve seat located in the housing.

4,184,815

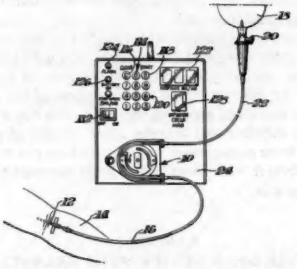
ROLLER PUMP ROTOR WITH INTEGRAL SPRING ARMS

Melvin E. Casson, West Chester, Albert E. Moore, Mainland, and George J. Berry, Sr., King of Prussia, all of Pa., assignors to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Mar. 14, 1977, Ser. No. 777,013

Int. Cl.[2] F04B *43/08, 43/12, 45/06*

U.S. Cl. 417—477 **8 Claims**



1. A fluid pump comprising a base, an upstanding wall on said base, a rotor rotatably mounted on said base, drive means for rotating said rotor, said rotor being formed from a plastic material in a generally circular shape in its plan view with an outer wall generally parallel to and spaced from said upstanding wall to define a tube containing path therebetween, a resilient tube fixedly disposed in said path, said rotor containing at least one integral spring arm formed therein by removing material from the generally circular rotor in the form of an arcuate slot extending inwardly from the periphery of said rotor along a path substantially parallel to the periphery of the rotor, a roller mounted on said spring arm and disposed at least partially in said path for making depressing contact with the resilient tube for forcing fluid through the tube as said rotor is rotated by said drive means, and said integral spring arm being sufficiently resilient to accommodate any back pressure developed in the tube.

4,184,816

ANGLED-EDGE CONTROLLED FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

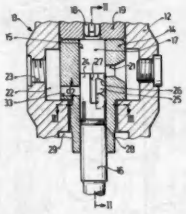
Karl Rapp, Stuttgart; Hans Brett, Bietigheim; Alex Tyrolt, Denkendorf, and Gabriel Stabentheiner, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 901,660

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720279

Int. Cl.[2] F04B *7/04;* **F02M** *59/26*

U.S. Cl. 417—499 **16 Claims**



1. An edge controlled fuel injection pump, having at least one pump piston forming, with a pump cylinder wall bore, an operating chamber, said piston being driven with a constant stroke and is both axially and rotationally movable within the cylinder bore and provided with an edge control recess in one side of its outer surface in constant communication with the operating chamber and which produces a connection between the operating chamber and a chamber with a lower pressure to end the fuel delivery by opening into a control bore in the pump cylinder wall and which has an annular leakage oil collecting groove separated from this recess, which groove during the piston stroke, can be connected with the low pressure chamber by means of a leakage oil channel and by means of a leakage oil bore in the cylinder wall opposite the control bore, said leakage oil bore opening into said pump cylinder bore and located an axial distance (c) from said control bore, said channel being formed in the outer surface of the piston, diametrically opposite the recess and extending in the direction of the operating chamber, and wherein the leakage oil channel comprises a plurality of leakage oil return grooves, one of which is in communication with the leakage oil collecting groove, said leakage oil return grooves being positioned on the outer surface of the piston and at a distance (b) from each other such that there is always at least one of the leakage oil return grooves in communication with the leakage oil bore during the useful stroke and in the rotational range (e) of the pump piston, which stroke and range determine the fuel injection quantity between idling and full load.

4,184,817

HIGH PRESSURE MULTI-CYLINDER PUMP

Ramon Pareja, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 1, 1977, Ser. No. 856,341

Int. Cl.[2] F16H *25/08;* **F04B** *21/04*

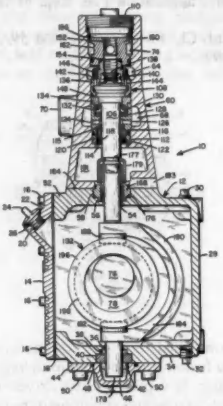
U.S. Cl. 417—539 **4 Claims**

1. In a multi-cylinder pump of the type including a camshaft journaled for rotation in an oil containing crankcase and having plural cylindrical lobes integrally formed thereon, the centers of said cylindrical lobes being eccentrically displaced from the axis of rotation of said cam shaft, a head block having plural piston chambers formed therein affixed to said crankcase, plural pistons disposed in said plural piston chambers, and unitary inlet/outlet valves disposed in said piston chambers between a low pressure fluid inlet port and a high pressure fluid outlet port, the improvement comprising:

(a) a plurality of cam roller bearings concentrically disposed

about said plural cylindrical lobes on said camshaft, said cam roller bearings having an outer race with an annular notch formed in the outer surface thereof;

(b) a yoke member for each cylinder of said multi-cylinder pump, said yolk members at least partially surrounding said cam roller bearings in a spaced apart, non-contacting relationship thereto and having wear bar means coupled



thereto, said wear bar means being disposed in said annular notches on said cam roller bearings, and

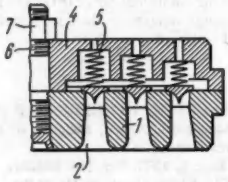
(c) means coupling said yoke members individually to said plural pistons, the arrangement being such that as the camshaft is rotated, the individual pistons are reciprocally pushed and pulled back and forth in a straight line path within said piston chambers.

4,184,818

VALVE FOR PISTON COMPRESSORS AND PUMPS

Bogdan S. Petrovsky, Ternopol; Samuil M. Perlin, Moscow; Anatoly A. Okunev, Gorky; Lev I. Nepomnyaschy, Gorky, and Nina I. Tepina, Gorky, all of U.S.S.R., assignors to Dizelny Zavod "Dvigatel Revoljutsii", Gory, U.S.S.R.

Filed Dec. 7, 1977, Ser. No. 858,458
Claims priority, application U.S.S.R., Jun. 17, 1977, 2489651
Int. Cl.[2] F04B *21/02, 39/10*
U.S. Cl. 417—569 **3 Claims**



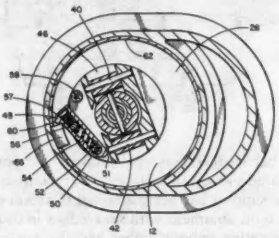
1. A valve for piston compressors and pumps comprising a seat with gas passages; at least one T-shaped circular plate mounted with means for being moved by the pressure differential acting on the valve for closing and opening the passages in said seat and having centering ribs formed as an integral part of the circular plate and adjoining a vertical element of the T-shaped profile of the plate at one side and the other side being limited by the diameter of the passages in the seat for centering the circular plate with respect to those passages; a circular plate lift limiting stop; and at least one spring located between said limiting stop and the plate, said spring ensuring movement of said plate for closing said passages in said seat at the initial moment of valve closing.

4,184,819

SECONDARY SPEED SENSOR FOR GOVERNED AIR GRINDERS

Melvin D. Clark, West Unity, Ohio, assignor to The Aro Corporation, Bryan, Ohio

Filed Jan. 23, 1978, Ser. No. 871,389
Int. Cl.[2] F01C *21/12;* **G05D** *13/10*
U.S. Cl. 418—43 **7 Claims**



1. An improved speed sensor device for attachment to a rotary shaft for sensing a threshold speed of the shaft, said shaft having a shaft axis of rotation, said sensor comprising, in combination:

a sensor body member attached to the shaft and pivotal about a mounting, said mounting having an axis generally parallel to and spaced from the shaft axis of rotation, said body member also being translatable in a direction generally transverse to the mounting axis between a locked position and an unlocked position, the weight of the body member being eccentric relative to the shaft axis;

locking pin means attached to the shaft for engaging the sensor body member in the locked position to hold the body member and prevent pivotal movement thereof about the mounting; and

biasing means engaging the sensor body member to bias the body member toward the locked position with the locking pin means, the body member being translated against the force of the biasing means upon rotation of the shaft beyond the threshold speed to impart a centrifugal force to the body member and thereby cause release of the body member from engagement with the locking pin means and permit pivotal movement of the body member about the mounting axis.

4,184,820

INTERNAL GEAR DEVICE WITH BALANCING RECESSES IN THE INSERT MEMBER

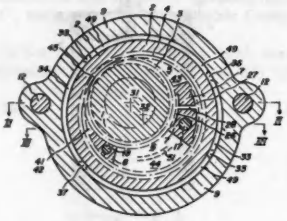
Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan (240-01)

Filed Feb. 16, 1978, Ser. No. 878,349
Int. Cl.[2] F01C *1/10, 19/00, 21/00;* **F03C** *3/00*
U.S. Cl. 418—71 **2 Claims**

1. An internal gear type fluid flow handling device, such as a pump or motor, with a commonly known structure of a housing means, cover means, entrance passage(s), exit passage(s), at least one rotary inner gear with outer gear teeth with outer faces on said teeth forming an interrupted outer diameter of said inner gear and at least one rotary outer gear with inner gear teeth with inner faces on said teeth forming an interrupted inner diameter of said outer gear, said outer gear being provided radially of said inner gear, said inner diameter of said outer gear being bigger than said outer diameter of said inner gear, said outer gear being eccentrically mounted with respect to said inner gear, mashing with said inner gear and thereby forming a fluid containing space between said gears and said

covers, at least one partially crescent shaped insert between said gears and said covers for sealing at least one portion of said space from an other portion of said space, sealing provisions for the ends of said gears, for portions of said inner diameter and said outer diameters of said gears and for at least one portion of said space; a high-pressure area in said space; and in addition to said known structure a novel improvement, comprising,

at least one fluid pressure forces balancing insert-portion on said insert between said gears within said space and located substantially diametrically of said high pressure area of said device; while said balancing insert-portion is provided with inner-and outer- fluid pressure balancing recesses, inner and outer seal faces on the ends of said recesses, at least one passage means extending from said high pressure area to at least one of said recesses, fluid communication means between said recesses,



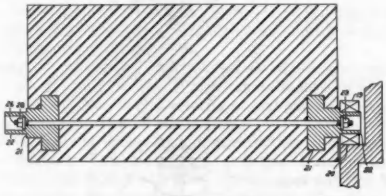
wherein said recesses are facing said teeth of said gears, respectively, said outer seal faces are facing said inner diameter of said outer gear and said inner seal faces are facing said outer diameter of said inner gear.

4,184,821

HIGH VELOCITY ROTARY VANE COOLING SYSTEM

Ronald E. Smolinski, 4081 Forest Ridge Blvd., Dayton, Ohio 45424, and Kenneth P. Schwartz, 2604 N. Emerald, Fairborn, Ohio 45324

Filed Aug. 10, 1978, Ser. No. 932,812
Int. Cl.[2] F04C *29/02*
U.S. Cl. 418—93 **3 Claims**



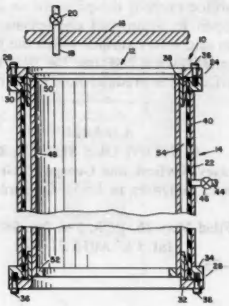
1. A rotary vane gas cycle cooling system, comprising: a compressor and an expander driven by a common shaft, said compressor and expander including a rotor, rotatably mounted on said shaft; said rotor having radially slidable vanes which form a plurality of cells which change in volume as the rotor rotates; said vanes being positioned in vane slots in the rotor and being supported on roller bearings; said rotor being positioned within a housing including vane bearing guide cams adjacent the ends of said vanes; said vanes being constructed of a carbon epoxy plastic composite material; a pair of bearing support inserts molded into the plastic composite on opposite sides of the vanes; means, for reducing friction and wear between said vanes and said rotor within said vane slots.

4,184,822

APPARATUS FOR MAKING POWER TRANSMISSION BELTING

Nile L. Schwabauer, Northglenn, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 617,338, Sep. 29, 1975, Pat. No. 4,095,480.
This application Aug. 24, 1977, Ser. No. 827,282
Int. Cl.[2] B29D *29/00*; B29C *17/00*; B29H *7/22*
U.S. Cl. 425—28 B **8 Claims**



1. Apparatus for curing an endless power transmission belt having at least one stable length tensile member embedded in a belt body, comprising:

an inwardly disposed metal mandrel having an outer circumferentially continuous mold surface of cylindrical shape, said metal having a coefficient of thermal expansion of at least about 10×10^{-6} per °F.;

means disposed outwardly of the mandrel for supplying pressure in a direction toward the mandrel;

said mandrel and pressure supplying means defining an annular cavity adapted to receive the belt body to be cured, the outer mold surface of the mandrel having an outside diameter at ambient, below curing temperature, that is slightly less than the inside diameter of the belt body to be cured; and

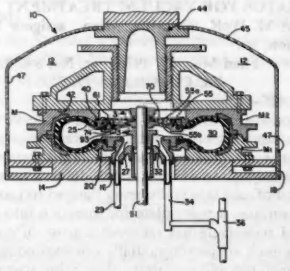
means for supplying heat to the mandrel to cause the mandrel to expand outwardly to fully engage and press againt the belt body placing the stable length tensile member under tension during curing of the belt body.

4,184,823

TIRE MOLD PRESS

Walter G. Williams, Danville, Va., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 26, 1978, Ser. No. 955,074
Int. Cl.[2] B29H *5/02*
U.S. Cl. 425—36 **6 Claims**



1. In a tire molding and curing apparatus of the steam dome type wherein a tire is to be molded and cured, the apparatus

having a tire mold including a top center plate on an upper surface of which steam-condensate can accumulate and the lower surface of which is exposed to fluid pressure for molding said tire;

the improvement comprising means defining a flow passage for condensate from said upper surface to said lower surface;

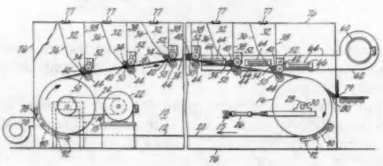
and valve means disposed in said passage and operable in response to a pressure difference acting across said valve means to close and remain closed while pressure on said lower surface exceeds the pressure on said upper surface and to open to drain said condensate from said upper surface to said lower surface when the pressure acting on said lower surface is less than the pressure acting on said upper surface by a predetermined difference.

4,184,824

CONTINUOUS SHEETER

Archie N. Swasey, Oxford, and George P. Grenier, Naugatuck, both of Conn., assignors to USM Corporation, Farmington, Conn.

Filed May 26, 1978, Ser. No. 909,611
Int. Cl.[2] A01J *21/00*
U.S. Cl. 425—75 **16 Claims**



1. A machine for the continuous manufacture of sheet material such as asbestos from a collection of its constituent materials, said machine comprising:

a generally horizontally arranged conveyor apparatus including an upstream rotatively empowered drum, and a transversely adjustable rotatable downstream drum, having a conveyor belt extending therearound;

a plurality of feed hoppers each for containing a portion of the constituent materials used in the manufacture of said sheet, said hoppers being sequentially arranged along the top side of said conveyor belt;

an arrangement of pressure rollers immediately downstream of each of said feed hoppers, at least a first one of said rollers being disposed above said conveyor belt, and at least a second one of said rollers being juxtaposed therewith on the opposite side of said conveyor belt; and

an enclosure surrounding said machine for maintaining an environmentally safe manufacturing operation.

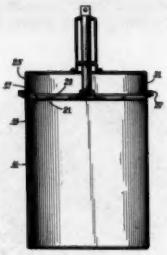
4,184,825

APPARATUS FOR VACUUM TREATMENT OF CHEESE

Raymond M. Wolf, Rockville, Minn., assignor to Kraft, Inc., Glenview, Ill.

Filed Mar. 27, 1978, Ser. No. 890,526
Int. Cl.[2] A01J *25/11, 25/15*
U.S. Cl. 425—85 **4 Claims**

1. Apparatus for molding curd into a cheese block prior to curing comprising a rigid open-topped receptacle for receiving a mass of curd, said receptacle having substantially straight side walls adjacent said open top to define a pressing zone, the upper end of said side walls being flanged to provide an upper bearing surface, a press plate for insertion into said open top after said receptacle has received a mass of curd, said press plate having a shape substantially corresponding to the shape of said open top and said press plate being free to float on the top of the mass of curd, said press plate having an upturned flange at the periphery of said plate to define a fluid reservoir on the upper surface of said plate and at least one orifice through said plate, said orifice having upstanding side walls, a rigid cover for said receptacle, said cover having a shape substantially corresponding to the shape of said open top and extending outwardly over said bearing surface of said receptacle, at least the periphery of said cover having a resilient material affixed thereto for engagement with said upper bearing surface of said receptacle, vacuum means communicating with



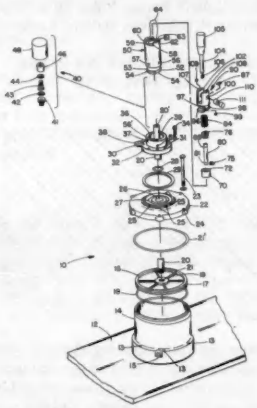
the space between said cover and said plate whereby vacuum is established in said space, said vacuum causing said cover to be engaged with said receptacle whereby said resilient material is compressed against said bearing surface to establish an air-tight seal and pressure means to force said press plate against the surface of said curd whereby residual whey is forced from said curd through said orifice in said press plate to collect in the reservoir on the surface of said press plate.

4,184,826

CLOSURE AND FLASH BREAKING APPARATUS FOR METALLOGRAPHIC SPECIMEN MOLDING DEVICE

Ramsey G. Reed, and Roy W. Johanson, both of St. Joseph, Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Sep. 18, 1978, Ser. No. 943,457
Int. Cl.[2] B29C *17/00;* **B30B** *1/02*
U.S. Cl. 425—110 **23 Claims**



1. A closure assembly for a metallographic specimen mounting press including a mold cylinder having a mold cavity with an open end for access, said closure assembly comprising:

a piston for enclosing the open end of the mold cavity of the mold cylinder;

a push rod having a first end coupled to said piston and an opposite end;

a closure body and means for securing said closure body to the open end of the mold cylinder including means for

slidably receiving said push rod, said closure body including means for engaging said opposite end of said push rod; and

means for moving said engaging means to selectively slide said push rod to move said piston within the mold cavity of the mold cylinder an incremental distance to break a molded article loose within the mold cavity.

4,184,827

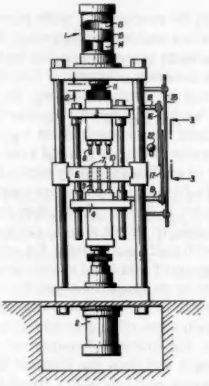
APPARATUS FOR MONITORING AND CONTROLLING THE OPERATION OF A DUAL PLATEN PRESS

Pieter J. von Herrmann, and Ronald S. Williams, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 641,327, Dec. 16, 1975, abandoned. This application Jan. 23, 1978, Ser. No. 871,739

Int. Cl.[2] B30B *11/02, 15/20*

U.S. Cl. 425—135 **8 Claims**



1. In combination with a dual platen press for forming pellets, said press including a first platen and a second platen and means for moving said platens to effect displacement of said platens with variable velocity toward and away from each other during a cycle of operation, apparatus for monitoring the operation of said press comprising:

means associated with said first platen and movable therewith for developing an indication of the displacement of said first platen;

means associated with said second platen and movable therewith for developing an indication of the displacement of said second platen; and

means for combining said indications of displacement to develop a first lissajous figure representative of the displacement and relative velocity of said platens during the cycle of operation of said platens;

said last-named means includng means for imposing said indications of displacement on orthogonal axes to jointly control the motion of a point which traces said first lissajous figure, the completion of said figure coinciding with the completion of the cycle of operation of said platens.

4,184,828

IMPRINTING MACHINE

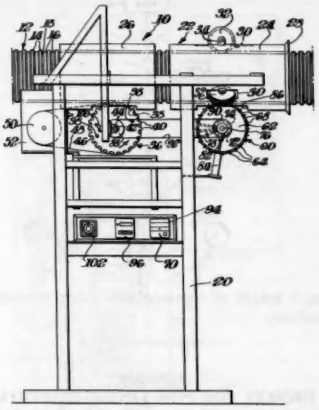
Bernard T. Farrell, Park Hills, Ky., assignor to Advanced Drainage Systems, Inc., Columbus, Ohio

Filed Apr. 20, 1978, Ser. No. 898,383

Int. Cl.[2] B29C *17/00;* **B29D** *23/18*

U.S. Cl. 425—143 **6 Claims**

1. A machine for imprinting indicia on thermoplastic corrugated tubing having alternating peaks and valleys comprising a framework, means on the framework for guiding corrugated tubing along a predetermined path of travel, motivating means connected to the framework constructed and arranged to continuously move the tubing along its path of travel, and imprinting means mounted on the framework adjacent the path of travel of the tubing for selective movement into and out of engagement with the exterior surface of the tubing, the imprinting means including a print wheel with spaced apart teeth at the periphery thereof arranged to mesh with the valleys of the corrugated tubing when the print wheel is in engagement



therewith, conductive print type releasably secured to the print wheel at the periphery thereof between at least some of the spaced apart teeth, means for heating the print type, and means for selectively shifting the print wheel into engagement with the exterior surface of the corrugated tubing as it moves along its path of travel whereby the heated print type softens the thermoplastic of the peaks to thereby heat stamp the indicia of the type onto the corrugated tubing.

4,184,829

APPARATUS FOR REPROCESSING SCRAP FROM FABRIC REINFORCED THERMOPLASTIC SHEET

William J. Benkowski, Jeannette, Pa.; Richard L. Fishel, Akron, and Francis J. Maurer, Tallmadge, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 451,390, Mar. 15, 1974, abandoned. This application Mar. 10, 1975, Ser. No. 556,602

Int. Cl.[2] B29B *1/04*

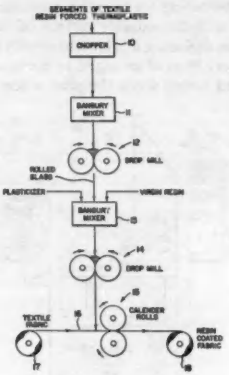
U.S. Cl. 425—202 **12 Claims**

1. Apparatus for forming a usable thermoplastic resin product containing short fibers from a fabric backed thermoplastic resin sheet material consisting essentially of

(a) means for forming fabric reinforced resin sheet material segments which are free of lint and fuzz of a size suitable for feeding the sheet material into a shearing force means;

(b) means for applying shearing force to said segments parallel to the surfaces thereof to tear said fabric into short-length fibers having lengths no greater than about 0.250 inch and to mix said thermoplastic resin and said short-length fibers wherein said means for applying said shearing force is adapted to be maintained at a temperature of below about 140° F. and wherein said shearing force is adapted to be applied for a time of between about 1 and 20 minutes; and

(c) means for applying heat and pressure to said mixture of thermoplastic and fibers formed on the shearing means to



form a length of thermoplastic resin product material therefrom.

4,184,830

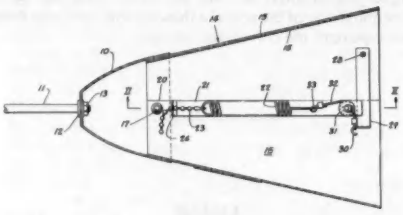
TROWEL FOR PIPE LINING MATERIAL

Alfred G. Perkins, 1000 Porterville Rd., East Aurora, N.Y. 14052

Filed Jul. 25, 1978, Ser. No. 927,854

Int. Cl.² B28B *7/32*

U.S. Cl. 425—262 **3 Claims**



1. A trowel for smoothing a layer of plastic material against the interior of a generally cylindrical conduit, said trowel comprising one or more longitudinally extending plates forming a frustoconical trowel body having overlapping portions corresponding to the number of trowel plates, connecting means at the small end of the trowel body constraining the same to a relatively fixed diameter at such small end but permitting diametral expansion and contraction of the trowel body at the large end by relative intersliding movement of said overlapping portions, and means at the interior of the trowel body for applying a resilient expanding force adjacent to the large end thereof, said means comprising a coil spring connected to the interior of said trowel adjacent to the leading end thereof and extending rearwardly therein along the edge portion of the inner one of each pair of overlapping trowel plates, motion translation means comprising a pulley carried by said inner trowel plate and a cable connecting with the rear end of said coil spring and extending laterally in the trowel means about said pulley and across the overlap of said trowel plates and into connection with the inner surface of the outer one of said pair of overlapping plates, whereby the tension of said spring acting through said motion translation means exerts a diameterincreasing force on said outer trowel plate.

4,184,831

APPARATUS FOR PRODUCING PLASTIC DRAIN PIPES

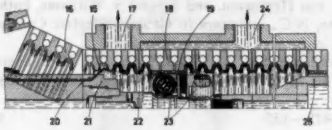
Wilhelm Hegler, and Ralph-Peter Hegler, both of 873 Bad Kissingen, Goethe Str. 2, Fed. Rep. of Germany

Division of Ser. No. 555,325, Mar. 4, 1975, Pat. No. 4,006,599. This application Jun. 9, 1976, Ser. No. 694,414

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1974, 2429718

Int. Cl.² B29D *23/04*

U.S. Cl. 425—290 **5 Claims**



1. In an apparatus for producing a drain pipe having annular or helical corrugations and having openings for the entry of water in distinct portions being disposed in said pipe at regular repeating intervals between corrugated lengths of pipe, said apparatus comprising an extruder having an extruder head, said extruder head having a generally annular opening defined by a generally circular die disposed about a generally circular mandrel, said apparatus having in general axial alignment with said opening a pair of endless travelling means in the form of a mold train, each of which travelling means carries cooperating mold halves which are in facing relationship generally axial of said opening and joined to define a mold cavity, means operatively associated with said mold cavity for exerting a partial vacuum on the contents of said mold cavity, some of said mold halves having grooves to form transversely corrugated pipe lengths of synthetic plastic extruded through said openings, the improvement wherein some of said mold halves have a cylindrical mold cavity, the internal diameter of the cylindrical sections being slightly less than the internal diameter of the transversely corrugated portions and a fixedly disposed pipe cutter means located inside the pipe and in the direction of travel downstream of the point where the mold halves separate, said fixedly disposed pipe cutter means engaging said cylindrical sections as they pass thereover but being in out of contact relationship with said transverse corrugated sections as they pass over, said mold halves being disposed on opposed sides and urging said pipe over said fixedly disposed pipe cutter to cut an aperture in said pipe no more frequent than every 20 cm of pipe length.

4,184,832

DIE CONSTRUCTION

David W. Cuff, Chepachet, R.I., assignor to Leesona Corporation, Warwick, R.I.

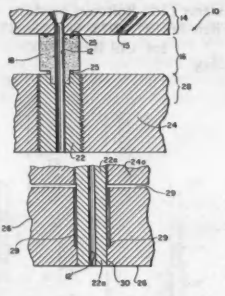
Division of Ser. No. 727,155, Sep. 27, 1976, Pat. No. 4,112,039, which is a continuation-in-part of Ser. No. 549,375, Feb. 12, 1975, Pat. No. 3,981,959, which is a continuation-in-part of Ser. No. 414,699, Feb. 10, 1974, abandoned, which is a division of Ser. No. 287,276, Sep. 8, 1972, Pat. No. 3,792,950. This application Jul. 3, 1978, Ser. No. 921,823

Int. Cl.² B29F *3/04, 3/08*

U.S. Cl. 425—308 **6 Claims**

1. A plural orifice extrusion die comprising: an apertured plate for operative engagement with an extruder, a second plate having a plurality of insert members positioned herein and passing therethrough and each extending from a side of said second plate opposite said apertured plate, porous members each having an orifice therethrough in sealed relationship with both said apertured plate and one of said insert members, means to conduct liquid coolant to exteriors of said porous members, each of said insert members having a through orifice, and a heater plate forming a heat reservoir in contact with each of said insert members adjacent an exit end of an extending

portion thereof and said heater plate also surrounding said insert members and being spaced therefrom and also spaced



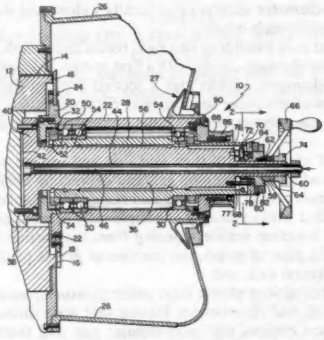
from said second plate to insulate said insert members from said heater plate except where said heater plate contacts said insert members.

4,184,833

PELLETIZING APPARATUS

Walter Buchan, Norton; Gomer E. Kropa, North Reading, both of Mass., and Edward J. Winiarski, Pawtucket, R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Oct. 25, 1977, Ser. No. 845,413
Int. Cl.[2] B29C *17/14*
U.S. Cl. 425—311 **7 Claims**



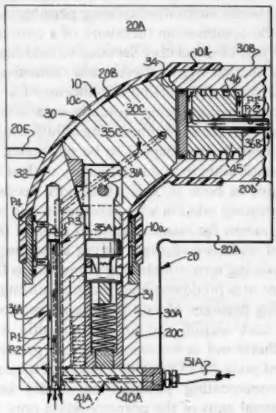
1. An apparatus for cutting material strands as they emerge from a melt extruder having a plurality of extrusion openings generally radially extending about the fact thereof comprising a stationary cylindrical hub outwardly extending from said face, a hollow generally stationary quill positioned over and attached to said hub at a location proximal to said extruder face by means of a mutual thread engagement, a knife carrier rotatably supported on said quill, said knife carrier having at least one knife mounted thereon and adapted for opposed positioning with respect to said extruder face and in the path of said openings so as to cut materials as it emerges therefrom upon rotation about said quill, and quill adjusting means supported by said hub and positioned at that end of said hub distal from said extruder face for rotating said quill about said mutual thread engagement with said hub to longitudinally move said quill with respect to said hub thereby adjusting the longitudinal spacing between said knife and said extruder face.

4,184,834

INJECTION MOLDING APPARATUS FOR PIPE FITTINGS

Jasper D. Barber, Charlotte, N.C., assignor to Charlotte Pipe and Foundry Company, Charlotte, N.C.

Filed Aug. 10, 1978, Ser. No. 932,427
Int. Cl.[2] B29F *1/00*
U.S. Cl. 425—548 **14 Claims**



1. In an injection molding apparatus for molding pipe fittings from hot plastic material and including a mold having a mold cavity therein defining the outer periphery of a desired pipe fitting; the combination therewith of a core pin assembly comprising a pair of distal core sections with at least one intermediate core section therebetween and collectively being of such size and shape as to define the interior of a desired pipe fitting, said core sections being mutually separable and having respective passages for accommodating a fluid coolant therein, said core sections being adapted to be positioned in abutting end-to-end relationship in said mold cavity with at least certain of the passages in at least one of said distal core sections in fluid intercommunicating relation with passages in said intermediate core section, means for circulating fluid coolant through passages in all of said core sections during a molding operation, and said circulating means including pump means for pumping a fluid coolant at a predetermined pressure through the intercommunicating passages of said one distal core section and said intermediate core section and for concurrently withdrawing the coolant therefrom at a suction pressure greater than said predetermined pressure to prevent leakage of the coolant from said intercommunicating passages outwardly between the abutting proximal ends of the corresponding core sections.

8. In an injection molding apparatus for molding pipe fittings from hot plastic material and including a mold having a mold cavity therein defining the outer periphery of a desired pipe fitting; the combination therewith of a core pin assembly comprising a pair of distal core sections with at least one intermediate core section therebetween and collectively being of such size and shape as to define the interior periphery of a desired pipe fitting, said core sections being mutually separable and having respective passages for accommodating a fluid coolant therein, said core sections being adapted to be positioned in abutting end-to-end relation in said mold cavity with at least certain of the passages of one of said distal core sections being in fluid intercommunicating relation with passages in said intermediate core section, but wherein said intercommunicating passages are out of communication with those passages in the other of said distal core sections, means for circulating fluid coolant through passages in all said core sections during a molding operation, and said circulating means including pump means for pumping a fluid coolant at a predetermined pressure

through the intercommunicating passages of said one distal core section and said intermediate core section and for concurrently withdrawing the coolant therefrom at a suction pressure greater than said predetermined pressure to prevent leakage of the coolant from said intercommunicating passages outwardly between the abutting proximal ends of the coresponding core sections.

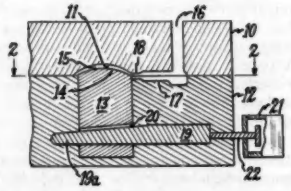
13. In an injection molding apparatus for molding pipe fittings from hot plastic material and including a mold having a mold cavity therein defining the outer periphery of a desired pipe fitting; the combination therewith of a core pin assembly comprising a pair of distal core sections with at least one intermediate core section therebetween and collectively being of such size and shape as to define the interior of a desired pipe fitting, said core sections being mutually separable and having respective passages for accommodating a fluid coolant therein, said core sections being adapted to be positioned in abutting end-to-end relationship in said mold cavity with at least certain of the passages in both of said distal core sections in fluid intercommunicating relation with passages in said intermediate core section, means for circulating fluid coolant through passages in all of said core sections during a molding operation, and said circulating means including pump means for pumping a fluid coolant at a predetermined pressure through the intercommunicating passages of said distal core sections and said intermediate core section and for concurrently withdrawing the coolant therefrom at a suction pressure greater than said predetermined pressure to prevent leakage of the coolant from said intercommunicating passages outwardly between the abutting proximal ends of the corresponding core sections.

4,184,835

MOLD APPARATUS

Howard M. Talbot, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Sep. 28, 1978, Ser. No. 946,536
Int. Cl.[2] B29D *11/00*; B29F *1/06*
U.S. Cl. 425—577 **8 Claims**



1. A mold apparatus for use in molding parts from thermoplastic resins, said mold apparatus comprising:

(a) a stationary injection mold block having formed therein a female mold member;

(b) a movable compression mold block containing a movable male mold member, such that when said injection and compression mold blocks are in an operative position, a mold cavity is defined by and between said female and male mold members;

(c) means to injection feed a thermoplastic resin into said mold cavity; and,

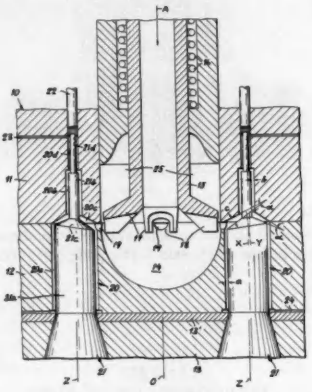
(d) means to actuate the male mold member in said compression mold block such that it further co-acts with said female mold member during about the last 20–25% of a mold cycle.

4,184,836

MULTIPLE MOLD FOR PRODUCING ELONGATE TUBULAR ARTICLES

Herbert Rees, Willowdale, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Jan. 27, 1978, Ser. No. 872,760
Int. Cl.[2] B29F *1/00*
U.S. Cl. 425—588 **8 Claims**



1. A mold for simultaneously producing a plurality of elongate tubular plastic workpieces, comprising:

a mold body provided with a central axis and with a chamber centered on said axis and flanked by a plurality of elongate parallel recesses each longitudinally divided by an intermediate step into a large-diameter section and a small-diameter section of generally cylindrical shape coaxial with each other;

a stepped core extending into each recess and defining therewith an elongate cavity with a first portion formed by said large-diameter section and a second portion formed by said small-diameter section, said portions having a common axis substantially parallel to said central axis and being interconnected by a generally transverse annular gap of greater width than said first and second portions, centered on said common axis and defined by confronting shoulders of said recess and said core, said chamber being provided with a plurality of peripherally spaced, generally radial injection orifices opening from the outside into the annular gaps of respective cavities at points proximal to said central axis; and

a source of molten plastic mass under pressure communicating with said chamber for forcing said mass through said injection orifices into said annular gap and thence into both said portions of each cavity.

4,184,837

COMBUSTION CONTROL SYSTEM

William P. Manning, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 21, 1976, Ser. No. 675,109
Int. Cl.[2] F23H *1/02*
U.S. Cl. 431—90 **1 Claim**

1. A combustion control system including an aspirating burner, including,

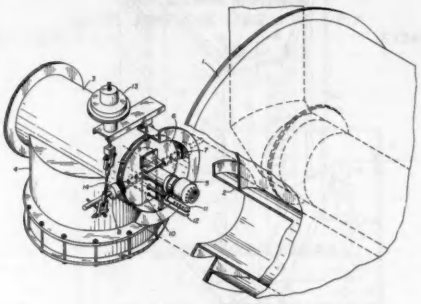
a firetube adapted to be mounted in a vessel containing a medium to be heated,

an aspirating burner mounted in the entrance to the firetube and drawing primary air directly in to mix with fuel supplied the burner,

a first plate mounted across the firetube entrance below the burner,

a second plate mounted across the firetube entrance just above the burner,

a damper formed of flat plate cut to a horseshoe configuration and pivoted from the side of the firetube to cooperate with the first and second plates to positively block off all air flow around the burner and through the tube when the damper is positioned to close the tube with the damper alternatively regulating the secondary air flowing into the entrance to the firetube and about the burner to the combustion process generated at the burner exit,



a first regulator in the fuel supply line to the burner,

a second regulator connected to position the damper,

and a controller arranged to respond to the temperature of a fluid heated by the firetube and generating a control signal connected in parallel to the first and second regulators,

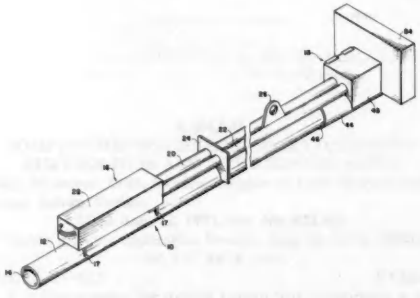
whereby the excess air to the combustion of the aspirating burner is regulated automatically in parallel with the regulation of the fuel to the burner over the range of firing rates of the burner.

4,184,838

IGNITER FOR OIL AND/OR GAS WELL DRILLING OPERATION

Kenneth L. Burns; Raymond E. Smith, and Don J. Doughdrill, all of, Odessa, Tex., assignors to Loffland Brothers Company, Tulsa, Okla.

Filed Sep. 27, 1977, Ser. No. 837,009
Int. Cl.[2] F23D *13/20*
U.S. Cl. 431—202 **8 Claims**



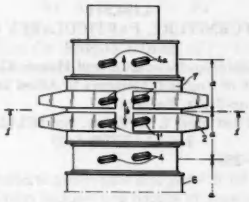
1. An igniter for flaring of excessive gas during an oil or gas well bore drilling operation and comprising an elongated pipe having one end in communication with the interior of the well bore for receiving gas pressure therefrom and the opposite outer end open for discharging said gas pressure, housing means secured to the pipe and shielding the outer end thereof, spark plug means disposed within the housing in the proximity of the said outer end of the pipe, power means, shielded electrical cable means operably connected between the power means and said spark plug means for activation thereof, and means providing a supply of oxygen at the said outer end of the pipe for mixing with the gas within the housing to assure an efficient igniting of the discharging gas passing the activated spark plug means.

4,184,839

ROLLER TRACK FOR PIPES

Helmut Landgraf, Duisburg-Rumeln-Kaldenhausen, and Klaus Lange, Duisburg, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 656,206, Feb. 9, 1976, abandoned. This application May 23, 1977, Ser. No. 799,209
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1975, 7504668[U]
Int. Cl.[2] F27B *9/14;* **F27D** *3/00*
U.S. Cl. 432—124 **5 Claims**



1. A pipe tempering furnace having a plurality of heating zones with a roller track extending therethrough, the track having a plurality of pairs of rollers for engaging the pipes, the rollers of a pair of the plurality being particularly spaced in a direction transversely to a direction of movement of the pipe in the furnace, most of the pairs being placed in locations of a series of locations being regularly spaced in the direction of movement, the improvement for avoiding scoring the surface of the pipes on the track, comprising:

at least a first one of the locations in the series being located adjacent a zone of maximum heating of the pipe in the furnace having no rollers but being located in about the middle between a first pair and a second pair of rollers; the first and second pairs being spaced from each other by less than said particular spacing, the first pair being located upstream in relation to the second pair, a third pair of rollers of the plurality being disposed in the next upstream location being spaced from the one location by the particular spacing in the series, but being spaced from the first pair of rollers by less than the particular spacing; and

means for resiliently supporting the rollers of at least one of the first and second pairs.

4,184,840

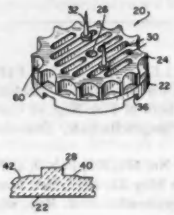
ROTATABLE SUPPORTING STRUCTURE

Murray G. Gamberg, and Aida Gamberg, both of 380 Taylors Mills Rd., Englishtown, N.J. 07726

Filed Apr. 28, 1978, Ser. No. 900,788
Int. Cl.[2] F27D *5/00*
U.S. Cl. 432—253 **17 Claims**

1. A ceramic rotatable supporting structure for use with intense heat comprising a ceramic base having a substantially planar upper surface, a ceramic pin located on the upper surface of said base extending upwardly therefrom and stationary with respect thereto, a slightly raised bearing surface completely surrounding said pin, a ceramic upper member having an opening at substantially the geographic center thereof, said opening being of a diameter slightly larger than the cross-sectional size of said pin, ceramic means for supporting a work-

piece located on the upper surface of said upper member whereby the upper member may be totatably disposed on said



base with said pin extending into said opening such that said upper member rotates about said pin.

4,184,841

KILN FURNITURE, PARTICULARLY CRANK STRUCTURES

William G. Robinson, Newcastle, and Horace G. Fellows, Tettenhall, both of England, assignors to Allied Insulators, Limited, Stoke-on-Trent, England

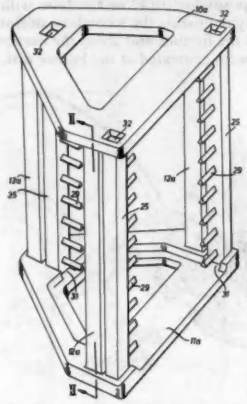
Filed Mar. 1, 1978, Ser. No. 882,423
Int. Cl.[2] **F27D** *5/00*
U.S. Cl. 432—258 **9 Claims**

1. A crank for holding and supporting articles of refractory or ceramic flatware in spaced and stacked relationship during kiln firing, said crank comprising:

(a) upper and lower end units,

(b) a first set of frame pillars having each end thereof fixedly attached to a respective upper and lower end unit to form a rigid unitary frame structure,

(c) a second set of separate support posts having each end thereof detachably mounted to a respective upper and lower end unit,



(d) each said separate support post having a plurality of spaced apart sockets, and

(e) support pins which plug into said sockets and project laterally to form collectively with said support posts a replaceable supporting rack.

4,184,842

CONTINUOUS DYEING OF CELLULOSE FIBERS WITH REACTIVE DYESTUFFS

Hans-Ulrich von der Eltz, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

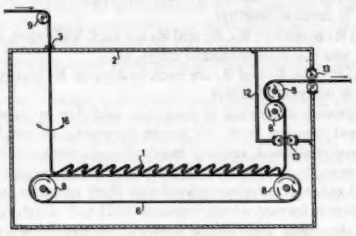
Continuation-in-part of Ser. No. 547,779, Feb. 7, 1975, abandoned. This application Jul. 8, 1976, Ser. No. 703,686

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1974, 2406257

The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.

Int. Cl.[2] D06P *1/38, 1/382, 3/66, 1/673*

U.S. Cl. 8—1 A 5 Claims



1. A process for the continuous dyeing of flat textile structures made of cellulose fibers and their mixtures with synthetic fiber materials by means of reactive dyestuffs, which comprises applying, at a temperature of from 20° to 80° C., an aqueous solution of at least one reactive dyestuff, and a fixation agent mixture of a liquid sodium silicate of the formula $Na_2O.xSiO_2$(x—3–5) and of from 37° to 60° Be and an aqueous sodium hydroxide solution of from 30° to 45° Be in a weight ratio of from 1:0.1 to 1:0.5, onto the web of fibrous material, placing the material thus treated into a dwelling chamber, exposing the material in a cuttled-up or opened-out condition in said chamber to humid heat, at the above-mentioned temperature range for 5 to 30 minutes, so that the dyestuff is fixed by the dwelling operation, and finally removing the material again continuously from the dwelling chamber.

4,184,843

COMPOSITION FOR DYEING HAIR CONTAINING DISPERSE DYES AND A THICKENING AGENT

Hans Baumann, Arild, Sweden, assignor to Carl Viktor Danielson, Astorp, Sweden

Filed Aug. 12, 1977, Ser. No. 823,913

Claims priority, application Sweden, Aug. 31, 1976, 7609628

Int. Cl.[2] A61K *7/13*

U.S. Cl. 8—10.1 8 Claims

1. A composition for dyeing human hair, comprising a disperse dye dispersed in an aqueous mixture of an emulsifying agent, a paraffin component and a thickening agent selected from the group consisting of fatty alcohols having 10–30 carbon atoms and fatty acid esters of isopropyl alcohol and glycerol, the amount of the paraffin component relative to the thickening agent component being proportioned so as to impart to the composition a viscosity range between 100 cP and 35,000 cP, said composition being adjusted to a pH not higher than 8.

4,184,844

STORAGE STABLE INDOANILINE AND INDOPHENOL DYE SOLUTIONS, A PROCESS FOR PRODUCING THE SAME AND HAIR DYE COMPOSITIONS CONTAINING THE SAME

Jean F. Grollier, and Chantal Fourcadier, both of Paris, France, assignors to L'Oreal, Paris, France

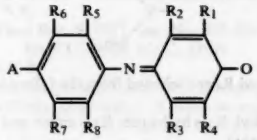
Filed Jul. 18, 1977, Ser. No. 816,499

Claims priority, application Luxembourg, Jul. 21, 1976, 75425

Int. Cl.[2] A61K *7/12;* D06P *1/32*

U.S. Cl. 8—10.2 8 Claims

1. A process for improving the storage stability of a dye having the formula:



and selected from the group consisting of (1) a dye wherein A is selected from the group consisting of hydroxy and

R_1, R_2, R_3 and R_4 are selected from the following groups of values:

(a) R_1 is methyl, R_2 is hydrogen, R_3 is methyl and R_4 is hydrogen,

(b) R_1 is methyl, R_2 is hydrogen, R_3 is hydrogen and R_4 is methyl,

(c) R_1 is methyl, R_2 is hydrogen, R_3 is amino and R_4 is hydrogen,

(d) R_1 is methyl, R_2 is hydrogen, R_3 is amino and R_4 is methyl,

(e) R_1 is methyl, R_2 is hydrogen, R_3 is acetylamino and R_4 is hydrogen,

(f) R_1 is methyl, R_2 is hydrogen, R_3 is acetylamino and R_4 is methyl,

(g) R_1 is methyl, R_2 is hydrogen, R_3 is carbamylamino and R_4 is hydrogen, and

(h) R_1 is methoxy, R_2 is hydrogen, R_3 is acetylamino and R_4 is hydrogen; with the proviso that when A is hydroxy, R_5, R_6, R_7 and R_8 are selected from the following groups of values:

(i) R_5, R_6, R_7 and R_8 are each hydrogen,

(j) R_5 is chlorine and R_6, R_7 and R_8 are each hydrogen,

(k) R_5 is methyl and R_6, R_7 and R_8 are each hydrogen,

(l) R_5 is hydrogen, R_6 is chlorine and R_7 and R_8 are each hydrogen, and

(m) R_5 is hydrogen, R_6 is methyl and R_7 and R_8 are each hydrogen; and that when A is

R_5, R_6, R_7, R_8, R_9 and R_{10} are selected from the following group of values:

(n) R_5 is hydrogen, R_6 is chlorine and R_7, R_8, R_9 and R_{10} are each hydrogen,

(o) R_5 is hydrogen, R_6 is chlorine, R_7, R_8 and R_9 are each hydrogen and R_{10} is ethyl,

(p) R_5 is hydrogen, R_6 is chlorine, R_7, R_8 and R_9 are each hydrogen and R_{10} is hydroxyethyl,

(q) R_5, R_6, R_7 and R_8 are each hydrogen and R_9 and R_{10} are each hydroxyethyl,
(r) R_5 is methyl, R_6, R_7 and R_8 are each hydrogen and R_9 and R_{10} are each methyl,
(s) R_5 is methyl, R_6, R_7 and R_8 are each hydrogen, R_9 is ethyl and R_{10} is carbamylmethyl,
(t) R_5 is methyl, R_6, R_7 and R_8 are each hydrogen, R_9 is ethyl and R_{10} is mesylamino ethyl, and
(u) R_5 is hydrogen, R_6 is chlorine, R_7 and R_8 are each hydrogen and R_9 and R_{10} are each methyl;
(2) a dye wherein

R_1, R_2, R_3 and R_4 are selected from the following groups of values:
(a) R_1 is methyl, R_2 is hydrogen, R_3 is amino and R_4 is hydrogen or methyl,
(b) R_1 is methyl, R_2 is hydrogen, R_3 is acetylamino and R_4 is methyl,
(c) R_1 is methyl, R_2 is hydrogen, R_3 is carbamylamino and R_4 is hydrogen, and
(d) R_1 is methoxy, R_2 is hydrogen, R_3 is acetylamino and R_4 is hydrogen; and
R_5, R_6, R_7, R_8, R_9 and R_{10} are selected from the following group of values:
(e) R_5 is methyl, R_6 is methoxy, R_7 is hydrogen, R_8 is methyl, R_9 is hydrogen and R_{10} is hydrogen, and
(f) R_5 is hydrogen, R_6 is methyl, R_7 is hydrogen, R_8 is methyl, R_9 is hydrogen and R_{10} is hydrogen;
(3) a dye wherein A is

R_1, R_2, R_3 and R_4 are selected from the following groups of values:
(a) R_1 is methyl, R_2 is hydrogen, R_3 is methyl and R_4 is hydrogen,
(b) R_1 is methyl, R_2 is hydrogen, R_3 is hydrogen and R_4 is methyl,
(c) R_1 is methyl, R_2 is hydrogen, R_3 is amino and R_4 is hydrogen,
(d) R_1 is methyl, R_2 is hydrogen, R_3 is amino and R_4 is methyl,
(e) R_1 is methyl, R_2 is hydrogen, R_3 is acetylamino and R_4 is methyl,
(f) R_1 is methyl, R_2 is hydrogen, R_3 is carbamylamino and R_4 is hydrogen, and
(g) R_1 is methoxy, R_2 is hydrogen, R_3 is acetylamino and R_4 is hydrogen; and
R_5, R_6, R_7, R_8, R_9 and R_{10} are selected from the following groups of values:
(h) R_5 is hydrogen, R_6 is chloro, R_7 is hydrogen, R_8 is hydrogen, R_9 is hydrogen and R_{10} is methyl,
(i) R_5, R_6, R_7, and R_8 are hydrogen, R_9 is ethyl and R_{10} is carbamylmethyl and
(j) R_5, R_6, R_7 and R_8 are hydrogen, R_9 is ethyl and R_{10} is mesylaminoethyl; and
(4) a dye wherein A is

R_1 is methyl,
R_2 is hydrogen,
R_3 is carbethoxy amino,
R_4 is hydrogen, and
R_5, R_6, R_7, R_8, R_9 and R_{10} are selected from the following groups of values:
(a) R_5, R_6, R_7 and R_8 are each hydrogen and R_9 and R_{10} are each hydroxyethyl,
(b) R_5 is methyl, R_6, R_7 and R_8 are each hydrogen and R_9 and R_{10} are each methyl,
(c) R_5 is hydrogen, R_6 is chlorine, R_7 and R_8 are each hydrogen and R_9 and R_{10} are each methyl,
(d) R_5 is methyl, R_6, R_7 and R_8 are each hydrogen, R_9 is ethyl and R_{10} is carbamylmethyl,
(e) R_5, R_6, R_7 and R_8 are each hydrogen, R_9 is ethyl and R_{10} is carbamylmethyl,
(f) R_5 is methyl, R_6, R_7 and R_8 are each hydrogen, R_9 is ethyl and R_{10} is mesylamino ethyl, and
(g) R_5, R_6, R_7 and R_8 are each hydrogen, R_9 is ethyl and R_{10} is mesylaminoethyl,

comprising dissolving at least one said dye in an anhydrous solvent selected from the group consisting of ethyl alcohol, isopropyl alcohol, tertiary butyl alcohol, monoethyl ether of ethylene glycol, monomethyl ether of ethylene glycol, monobutyl ether of ethylene glycol and their mixtures, wherein a solution is formed which contains 0.001 to 5 weight percent of said dye, and maintaining said dye in the presence of said anhydrous solvent during the storage thereof.

4,184,845

PROCESS FOR REDUCTION OF LIGNIN COLOR

Stephen Y. Lin, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 18, 1975, Ser. No. 569,560
Int. Cl.[2] **C09B** *9/00;* **C07G** *1/00*
U.S. Cl. 8—34 **7 Claims**

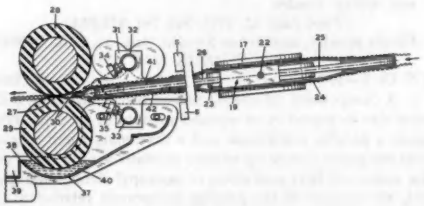
1. A two-step process for producing light colored lignin which comprises;
(a) reacting a sulfonated alkali lignin or lignosulfonate with from 1 to 20 moles of a member selected from the group consisting of alkylene oxides, halogen-containing alkyl alcohol, alkyl sulfonate and alkylene carbonate at a temperature from 0° C. to 200° C. until at least 90% of the phenolic hydroxyl groups are blocked and thereafter,
(b) treating said blocked lignin with an oxidant until the original color of said lignin is made lighter by at least 80%.

4,184,846

METHOD AND APPARATUS FOR LIQUID PROCESSING OF TUBULAR KNITTED FABRICS

Edmund A. Diggle, Jr., Oradell, N.J., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,226
Int. Cl.[2] **D06B** *1/02, 1/14*
U.S. Cl. 8—149.1 **10 Claims**



1. The process of liquid treating tubular knitted fabric, which comprises
(a) advancing the fabric in a generally horizontal direction

while laterally distending the fabric to a predetermined uniform width,

(b) in the case of dry fabric, steaming such fabric while it is thus laterally distended,

(c) discontinuing said lateral distending step and guiding said fabric substantially immediately and directly, and in a generally horizontal direction, into and through the pressure nip of a pair of resilient pressure rollers,

(d) introducing processing liquid into contact with the fabric in the region immediately upstream of said pressure nip, and

(e) guiding said fabric in a slightly downward direction in the region immediately in advance of said pressure nip, while continuing to laterally distend said fabric, whereby excess processing fluid on said fabric, in the region immediately in advance of said pressure nip, is prevented from excessively sagging said fabric sufficiently to form a puddle of processing solution on said fabric.

8. Apparatus for liquid processing of tubular knitted fabric, which comprises

(a) a pair of resilient rollers mounted one above the other and forming a resilient pressure nip,

(b) a tubular fabric spreader comprising a pair of laterally spaced spreader frame sections for engaging and supporting internal lateral edges of a fabric tube while distending the fabric to flat form and to a predetermined uniform width,

(c) means for supporting said spreader at a downwardly inclined angle of less than ten degrees,

(d) said supporting means and said spreader being so arranged that the discharge end of said spreader is positioned substantially at said pressure nip for the direct discharge of fabric into said pressure nip, and

(e) means for introducing processing solution to the fabric surface immediately in advance of said pressure nip.

4,184,847

METHOD OF INDICATING RHEUMATOID FACTORS

Henning R. Hallgren, Upplands-Balinge, and Leif E. Wide, Uppsala, both of Sweden, assignors to Pharmacia Diagnostics AB, Uppsala, Sweden

Filed Jul. 25, 1977, Ser. No. 818,647

Claims priority, application Sweden, Sep. 8, 1976, 7609905

Int. Cl.[2] G01N *33/16*

U.S. Cl. 23—230 B **3 Claims**

1. A method of indicating rheumatoid factors in an aqueous sample of human origin, said rheumatoid factors being other than those belonging to the IgM class, said method comprising:

(a) treating said sample so that there is a presence of C1q in non-bound form,

(b) reacting the treated sample with soluble, aggregated immunoglobulin labelled with one or more analytically indicatable atoms or groups to selectively precipitate such rheumatoid factors, and

(c) thereafter measuring indicatable atoms or groups in the precipitated phase formed and/or in the solution.

4,184,848

ELIMINATING TURBIDITY IN SERUM UNDERGOING PHOTOMETRIC ASSAY

Hans-Georg Batz; Brigitte Draeger, both of Tutzing; August W. Wahlefeld, Weilheim; Günter Weimann, Tutzing, and Wolfgang Gruber, Tutzing-Unterzeismering, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Sep. 23, 1977, Ser. No. 836,111

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2724757

Int. Cl.[2] G01N *33/16, 31/14*

U.S. Cl. 23—230 B **9 Claims**

1. Method for eliminating turbidity which interferes with photometric measurements in serum, which method comprises adding to the serum sample an agent comprising essentially an ester component consisting of at least one mono- or di-ester of polyethylene glycol and fatty acids of 9 to 14 carbon atoms with at most 8 ethylene oxide units per fatty acid moiety in the molecule, said ester component having an HLB value between 8 and 12.8, which agent is added to the serum sample in an amount of from 0.5 to 5 weight percent based on said serum sample.

4,184,849

MIXED AGGLUTINATION

Cesar L. Cambiaso, Kraainem; Floris de Steenwinkel, Brussels; Adrian E. Leek, Diegem, and Pierre L. Masson, Brussels, all of Belgium, assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,476

Int. Cl.[2] G01N *31/02, 33/16*

U.S. Cl. 23—230 B **17 Claims**

1. A method of assaying a sample containing a particular antigen or antibody constituent of interest, comprising the steps of:

(a) forming a mixture of:

(i) a first reagent bound with a first carrier;

(ii) a second reagent bound with a second carrier of different size than said first carrier; and

(iii) a sample containing said particular antigen or antibody constituent of interest;

said first and second reagents tending to bind with each other to form a measurable reaction, and said particular constituent tending to bind with one of said reagents and preclude binding thereof with the other of said reagents;

(b) incubating said mixture to effect binding between said first reagent, second reagent, and said constituent; and

(c) measuring said reaction to determine the amount of said constituent in said sample.

4,184,850

DIAGNOSTIC AGENT FOR THE DETECTION OF KETONE BODIES IN FLUIDS AND PROCESS FOR ITS MANUFACTURE

Klaus Habenstein, Wunstorf, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,246

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733426

Int. Cl.[2] G01N *33/16*

U.S. Cl. 23—230 B **7 Claims**

1. A diagnostic agent for the detection of ketone bodies in a fluid, said agent consisting of an absorbent carrier material impregnated with sodium nitroferricyanide, a water-soluble lower amino acid, an alkaline buffer substance, and at least one organic acid, said organic acid serving to form a stabilizing environment around the sodium nitroferricyanide.

4,184,851

BORATED DERIVATIVES OF HYDROCARBON SUBSTITUTED SUCCINAMIC ACIDS AND/OR ACID SALTS THEREOF ARE FLOW IMPROVERS FOR MIDDLE DISTILLATE FUEL OILS (PT-364)

Nicholas Feldman, Woodbridge, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

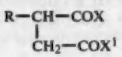
Continuation of Ser. No. 818,612, Jul. 25, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,255

Int. Cl.[2] C10L *1/22;* **C07C** *107/02*

U.S. Cl. 44—71 **7 Claims**

1. A method of improving the cold flow properties of a middle distillate petroleum fuel oil boiling in the range of 120° to 400° C. and containing normal paraffin waxes which tend to precipitate in large crystals at low temperatures, which method comprises adding to said oil at least a cold flow improving amount of an oil-soluble cold flow improver which limits the size of precipitating wax crystals at low temperatures

and which is a borated succinamic acid or its derivative having the following formula



wherein: R is a straight chain aliphatic hydrocarbon group having from 0 to 1 site of olefinic unsaturation (alkyl or alkenyl) attached at a secondary carbon atom to the succinyl group and is of about 15 carbon atoms to about 30 carbon atoms; one of X and X^1 is selected from the group consisting of OH and $OH(NHY^2Y^3)n$; and the other is

wherein N has its normal meaning of nitrogen and Y and Y^1 are aliphatic hydrocarbyl groups of from 14 to 30 carbon atoms and having a total of from about 30 to 52 carbon atoms; Y^2 and Y^3 are each selected from the group consisting of hydrogen, aliphatic hydrocarbon of 1 to 30 carbon atoms and oxyaliphatic hydrocarbon of 3 to 30 carbon atoms; and n is 0 to 1; said borated succinamic acid or its derivative containing from about 0.1 to about 2 percent by weight of boron.

4,184,852

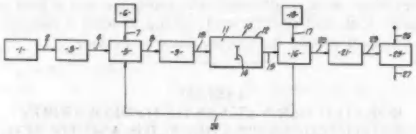
METHOD FOR MAKING METHANE FROM METAL CARBIDES

James J. Russ, 1702 Tamarack La., Germantown, Tenn. 38138

Continuation-in-part of Ser. No. 728,901, Oct. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 642,891, Dec. 22, 1975, abandoned. This application Feb. 21, 1978, Ser. No. 879,777

Int. Cl.[2] C10J *3/16*

U.S. Cl. 48—197 R **11 Claims**



1. A method for making methane comprising reacting sufficient water with a metal carbide complex which comprises a mixture of at least one metastable carbide-forming metal element selected from the group consisting of cadmium, zinc, barium, copper, zirconium, iron and lead and at least one stable carbide forming metal element selected from the group consisting of aluminum, manganese, calcium, magnesium, beryllium, and boron, to produce a mixture of gaseous hydrocarbons comprising at least about 85% methane and recoverable metal values comprising a mixture of said at least one metastable carbide-forming metal element and said at least one stable carbide-forming metal element, then reacting said recovered metal values with sufficient carbon to form said metal carbide complex.

4,184,853

INDIVIDUAL ABRASIVE GRAINS WITH A SILICON-BASE ALLOY COATING

Petr P. Otopkov, 9 Sokolnicheskaya ulitsa 20, kv. 51; Alla V. Nozhkina, ulitsa Kozlova, 38, kv. 1; Valery I. Kostikov, ulitsa Vavilova, 93, kv. 91; Jury I. Andropov, prospekt Mira, 49, kv. 66; Anatoly I. Senchakov, prospekt Mira, 70, kv. 32; Anna Y. Pesina, ulitsa Taganrogskaya, 11, korpus 2, kv. 16, and Alexandr V. Kabanov, ulitsa Svobody, 93, korpus 1, kv. 284, all of Moscow, U.S.S.R.

Filed Apr. 21, 1976, Ser. No. 678,992

Int. Cl.[2] B24D *3/06*

U.S. Cl. 51—295 **14 Claims**

1. In an abrasive substance of single grain selected from the group consisting of diamond and boron nitride having a coating of a silicon alloy which includes at least one element selected from the group consisting of copper, silver, gold, aluminum and transition metals of the 4th–8th Groups of the Periodic System, the improvement which comprises including in said coatings at least one additional element selected from the Group consisting of gallium, indium, thallium, germanium, tin, lead, phosphorus, antimony, tellurium and sulfur, said additional elements ranging in quantity from 2 to 80 weight percent of the total coating weight, the thickness of said coating being 0.01 to 1.000 micron.

4,184,854

MAGNETIC CORES FOR DIAMOND OR CUBIC BORON NITRIDE GRINDING WHEELS

Richard H. Sioui, Holden, and Edgar B. Carver, Sutton, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Apr. 24, 1978, Ser. No. 899,519

Int. Cl.[2] C09K *3/14*

U.S. Cl. 51—298 **4 Claims**

1. A grinding wheel comprising a grinding annulus containing diamond or cubic boron nitride abrasive particles in a bonding matrix said annulus supported on a central hub comprising hot pressed aluminum powder, characterized in that the aluminum hub includes from 5 to 25% by volume of a bonding aid selected from the group consisting of resin, tin and zinc and from 20 to 40% by volume of a magnetic metal powder.

4,184,855

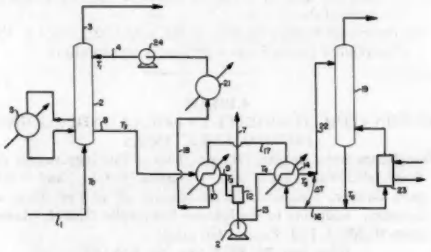
PROCESS FOR CO_2 REMOVAL

Kenneth F. Butwell, Newburgh, and Daniel J. Kubek, Greenburgh, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,732

Int. Cl.[2] B01D *53/16*

U.S. Cl. 55—48 **11 Claims**



1. A continuous process for the removal of acid gases from a feed gas mixture by contacting the feed gas mixture with an aqueous alkanolamine solution, the alkanolamine having 1 to 3 alkanol radicals, each radical having 2 or 3 carbon atoms comprising

(a) introducing into an absorption zone a feed gas mixture of

process gas and acid gas comprising a process gas selected from the group consisting of a hydrocarbon, a mixture of hydrocarbons, synthesis gas and a mixture of nitrogen and hydrogen; and about 5 to about 60 percent by volume of an acid gas selected from the group consisting of carbon dioxide, hydrogen sulfide and mixtures thereof; wherein percent by volume is based on the total volume of the mixture of process gas and acid gas introduced into the absorption zone, at an absorption zone inlet temperature (To), for the feed gas mixture in the range of 140°–190° F.;

(b) countercurrently contacting the feed gas mixture in the absorption zone with a mixture of an aqueous alkanolamine solution, said aqueous alkanolamine solution having a concentration of from 15–95 weight percent of the alkanolamine and a temperature (Ti) of from 105°–162° F. to absorb the acid gas from the feed gas mixture;

(c) passing at least most of the downflowing acid gas containing alkanolamine solution through a cooling zone when the solution has reached a temperature of from 135°–185° F. to lower the temperature of the solution and then passing the cooled acid gas containing solution through the absorption zone to increase the mole leading of acid gas in the solution such that the temperature (T_2) of the rich solution leaving the absorption zone never exceeds 185° F.;

(d) removing the acid gas rich solution having an acid gas loading of 0.50 m/m to 0.67 m/m from the bottom of the absorption zone and passing such solution in heat exchange relationship with a recycling regenerated alkanolamine solution to increase the temperature of the rich solution (T_3) in the range of from 170°–195° F.;

(e) passing the heated rich solution from step (d) to a flash zone to remove more of the acid gas loading from the alkanolamine solution than if the stream were not heated such flashing reducing the temperature of the solution to temperature (T_4) in the range of from 155° to 180° F.;

(f) passing the reduced acid gas containing stream from step (e) in heat exchange relationship with the recycling regenerated alkanolamine solution to increase the temperature to a temperature (T_5) in the range of from 200° to 240° F.;

(g) introducing the heated solution from step (f) into a stripping zone so that reduced sensible heat is required to be added to the system to strip acid gas from the solution;

(h) separating the mixture of acid gas and a minor proportion of water from the solution introduced to the stripper, the separated water being in the form of vapor and removing said mixture as overhead from the stripping zone;

(i) removing the balance of the solution from step (h) from the bottom of the stripping zone at a temperature (T_6) in the range of 240°–280° F.;

(j) passing the hot regenerated solution from step (i) in heat exchange relationship with the solutions in steps (d) and (f) and then to a cooling zone where the temperature (T_1) is reduced to 105°–162° F.;

(k) and then recycling the solution of step (j) to the absorption zone.

4,184,856

METHOD FOR THE UTILIZATION OF THE HEAT ENERGY OF SEWAGE

Torgny A. Thorén, 23, Namndemansvägen, Sollentuna, Sweden

Filed Mar. 2, 1978, Ser. No. 882,736
Int. Cl.² F24J *3/04*
U.S. Cl. 55—52 **4 Claims**

1. A method for the utilization of the heat energy of sewage flowing through a sewer conduit, comprising:

(a) producing an airflow passing through the sewer conduit from at least one air inlet on the sewer conduit to a place of utilization remote from the air inlet in countercurrent relation and in direct contact with the flowing sewage;

(b) separating the air flow from any sewage flow between the sewer conduit and a heat exchanger;

(c) removing heat from the airflow by means of the heat exchanger; and

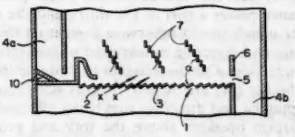
(d) utilizing such heat for heating purposes, the removal and utilization of the removed heat taking place at the place of utilization.

4,184,857

STRIPPING COLUMN AND PROCESS FOR REMOVAL OF VOLATILE MATTER

Takashi Iijima, Yokohama; Taizan Suzuki, Fujisawa; Yusuke Murayama, Yokohama; Eitaro Nakamura, and Shinji Ueno, both of Kurashiki, all of Japan, assignors to JGC Corporation and Nippon Zeon Co., Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 782,878, Mar. 30, 1977, abandoned. This application Jan. 23, 1978, Ser. No. 871,581
Claims priority, application Japan, Apr. 5, 1976, 51-37215
Int. Cl.² B01D *19/00, 3/14*
U.S. Cl. 55—54 **17 Claims**



1. A process for removing volatile matter from a slurry containing sedimentary solid matter and the volatile matter comprising feeding the slurry into a stripping column at the top portion while introducing a stripping gas into the column at the bottom portion, said column comprising a plurality of trays disposed one above another and each comprising a plurality of tray segments and a downcomer, each of the tray segments being so formed as to have a plurality of inclined slits and inclined planes to provide a gas-liquid-solid mixed phase above the tray, said tray segments being so arranged that the direction of the slits vary from segment to segment in turn thereby accelerating the flowing velocity of the slurry on the tray and providing a zigzag flow to the slurry on the tray; the improvement comprising the steps of:

inhibiting the gas-solid-liquid mixed phase on the tray from flowing freely to the downcomer to the next lower tray to thereby ensure a sufficient resident time of said mixed phase on the tray;

simultaneously with said inhibiting step preventing deposit of sedimentary matter on the tray by passing and guiding a part of the slurry to said downcomer;

effecting said step of simultaneously inhibiting said free flow of said mixed phase and preventing depositing of sedimentary matter on the tray by providing a baffle on the downstream side of the tray and providing a clearance between the lower end of the baffle plate and the tray such that the baffle restricts the flow of the said mixed phase while the clearance passes a part of the slurry and the sedimentary matter which would otherwise deposit on the tray; and

impinging and directing at least part of said mixed phase to the underside of the next higher tray to thereby clean said next upper tray and render the tray self-cleaning,

said impinging and directing step being effected by providing at least one stream breaker above the tray and providing said stream breaker with a plurality of slits through which the mixed phase blows to impinge on the overlying tray to effecting said cleaning.

9. A process for removing vinyl chloride monomer from an aqueous polyvinyl chloride slurry containing the vinyl chloride monomer comprising the steps of:

feeding the slurry into a stripping column at the top portion while introducing a stripping gas into the column at the bottom portion, said column comprising a plurality of trays disposed one above another and each comprising a plurality of tray segments and a downcomer, each of the tray segments being so formed as to have a plurality of inclined slits and inclined planes to provide a gas-liquid-solid mixed phase above the tray, said tray segments being so arranged that the direction of the slits vary from segment to segment in turn thereby accelerating the flowing velocity of the slurry on the tray and providing a zigzag flow to the slurry on the tray;

inhibiting the gas-solid-liquid mixed phase on the tray from flowing freely to the downcomer to the next lower tray to thereby ensure a sufficient resident time of said mixed phase on the tray;

simultaneously with said inhibiting step preventing deposit of sedimentary matter on the tray by passing and guiding a part of the slurry to said downcomer;

effecting said step of simultaneously inhibiting said free flow of said mixed phase and preventing depositing of sedimentary matter on the tray by providing a baffle on the downstream side of the tray and providing a clearance between the lower end of the baffle plate and the tray such that the baffle restricts the flow of the said mixed phase while the clearance passes a part of the slurry and the sedimentary matter which would otherwise deposit on the tray;

impinging and directing at least part of said mixed phase to the underside of the next higher tray to thereby clean said next higher tray and render the tray self-cleaning;

said impinging and directing step being effected by providing stream breakers above the tray and providing said stream breakers with a plurality of slits through which the mixed phase blows to impinge on said next overlying tray to effect said cleaning;

maintaining the slurry at at least 40° C. at the top of the column and not higher than 110° C. at the bottom thereof while the column is kept at a reduced pressure; and then

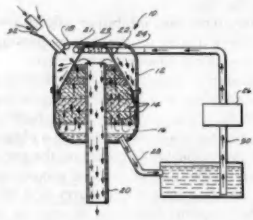
recovering the volatile matter from the column at the top and the volatile matter-stripped slurry therefrom at the bottom.

4,184,858

ENGINE EMISSION CONTROL DEVICE

Robert A. Walker, 5760 W. Third St., Los Angeles, Calif. 90036

Continuation of Ser. No. 553,921, Feb. 28, 1975, abandoned.
This application Dec. 14, 1976, Ser. No. 750,357
Int. Cl.[2] B01D *47/00*
U.S. Cl. 55—228 **2 Claims**



1. A filtering apparatus for pressurized air-contaminate mixtures comprising:

a closed housing having a hollow interior;

a liquid reservoir located at the bottom of the housing;

at least one airtight inlet port opening into the housing interior for communicating air-contaminate mixtures at pressures higher than ambient pressure into the housing;

a bed of filtration material located within the interior of the housing;

means defining a flow path through the housing and bed of filtration material for air-contaminate mixtures introduced through the inlet port, said bed of filtration material being located transversely of the flow path;

an outlet conduit extending axially through the bottom portion of the housing, the reservoir and a substantial portion of the filtration material, said outlet conduit having a greater cross sectional area than said inlet port such that a reduction in the pressure of the air-contaminate mixtures in the passage thereof through the housing toward the outlet conduit is produced causing deposition of contaminates in the mixture due to the pressure reduction;

baffling means located intermediate the inlet port and outlet conduit whereby the flow path through the housing reverses direction at least one time between inlet and outlet; and

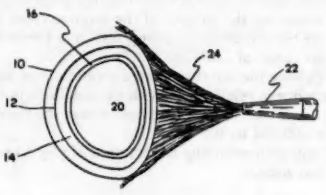
means for introducing a supply of a clean hydrocarbon filtering liquid into the housing for dispersion through the filtering material by gravity flow to coat the filtration material and to remove entrained contaminates deposited on the material to the reservoir, the filtering liquid introducing means including a liquid circulating system having recirculating pump means and an auxiliary inlet and outlet conduit interconnecting said pump means and the apparatus for continually recirculating filtering liquid within the apparatus.

4,184,859

METHOD OF FABRICATING AN ELLIPTICAL CORE SINGLE MODE FIBER

Mokhtar S. Maklad, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jun. 9, 1978, Ser. No. 914,246
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—2 **6 Claims**



1. A method of fabricating an optical fiber suitable for transmission of a single mode of injected light through a substantially elliptically shaped core portion, comprising the steps of:

preparing a multi-layered coated tube having at least a substrate, cladding and core layers of glass;

heating said coated tube along the length of one side to a temperature sufficient to cause partial collapse of said one side;

heating along the length of the opposite side of said coated tube to a sufficient temperature to cause partial collapse of said opposite side of said coated tube; and

collapsing said partially collapsed coated tube to form a substantially cylindrically shaped optical fiber preform having a substantially elliptically shaped core portion.

4,184,860

PROCESS FOR THE PRODUCTION OF GLASS FIBER LIGHT CONDUCTORS

Hartmut Schneider, and Egon Lebetzki, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,012

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1977, 2727054

Int. Cl.[2] C03B *37/00*

U.S. Cl. 65—3 A 9 Claims

1. In a process for the production of glass fiber light conductors having a core with a surrounding cladding, the process including providing a preform having a core of the material for the core of the glass fiber surrounded with a glass material forming a cladding thereof, heating the fiber preform to a temperature for drawing the preform into a glass fiber, and then drawing the preform into a glass fiber, the improvement comprising applying an intermediate layer to the cladding material, said intermediate layer consisting of a glass material having a coefficient of thermal expansion higher than the coefficient of thermal expansion of the cladding material, and then applying to the intermediate layer at an elevated temperature at least one protective layer consisting of a glass material, which has a coefficient of thermal expansion lower than the coefficient of thermal expansion of the adjoining glass material of the intermediate layer so that when the drawn fiber with the protective layer is at room temperature, the protective layer will be subjected to compressive stresses and the tensile strength of the fiber will be increased.

4,184,861

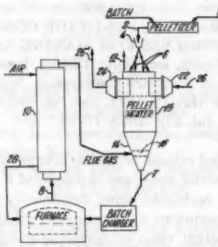
ENERGY EFFICIENT APPARATUS AND PROCESS FOR MANUFACTURE OF GLASS

Thomas D. Erickson, Newark, and Charles M. Hohman, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 13, 1978, Ser. No. 924,274

Int. Cl.[2] C03B *3/00*

U.S. Cl. 65—27 14 Claims



1. In a glass manufacturing method comprising: converting glass-forming batch ingredients into agglomerates, heating a bed of said agglomerates in a chamber by direct contact with flue gases so as to produce non-aggregated agglomerates, said flue gases originating in a glass melting furnace and having been cooled in a heat exchanger prior to said direct contact heating, and discharging said heated agglomertes to a glass melting furnace; the improvement comprising indirectly extracting heat from said flue gases during said heating in said chamber.

9. In a glassmaking apparatus comprising: means for converting glass-forming ingredients into agglomerates, a combustion-heated glass melting furnace, means for cooling combustion gases, chamber means for preheating a bed of said agglomerates by direct contact with the combustion gases of said furnace, means for transporting agglomerates from said converting means to said chamber means, means conveying combustion gases from said furnace to said combustion gas cooling means then to said chamber means, and means for conveying preheated agglomerates from said chamber to said furnace; the improvement comprising heat exchange means disposed in said chamber for indirectly extracting heat from said combustion gases.

4,184,862

HEAT EXCHANGER GAS SEPARATOR

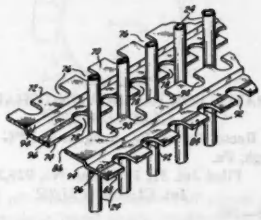
E. Dale Waters, Richland, Wash., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 728,303, Sep. 30, 1976, Pat. No. 4,098,326.

This application Mar. 9, 1978, Ser. No. 884,916

Int. Cl.[2] F28F *9/00*

U.S. Cl. 165—76 11 Claims



1. A heat exchanger separator structure comprising:

means for receiving a plurality of generally parallel, heat exchanging elements extending between first and second fluid passages and for providing a substantially gas-tight separator for fluids in the first and second passages, respectively, said means including a plurality of respective overlapping sections, each section being in the shape of an elongate beam having a top side, a bottom side, a first edge and a second edge, wherein along the first edge and along the second edge are spaced generally U-shaped indentations adapted to receive heat exchanging elements in perpendicular relation thereto, and wherein the first edge is vertically lower than the second edge in order that when two such elongate beams are positioned together, the first edge of one overlaps the second edge of the other in horizontal relationship to each other; and

means for supporting the elongate beam sections in an integral extended structure.

4,184,863

GLASS MELTING FURNACE AND METHOD

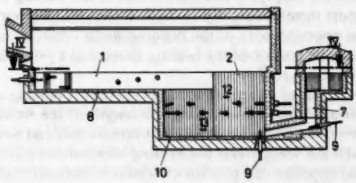
Helmut Pieper, Lohr, Fed. Rep. of Germany, assignor to Sorg GmbH & Co. KG, Plochsbach, Fed. Rep. of Germany

Filed Jan. 26, 1978, Ser. No. 872,408

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1977, 2703223

Int. Cl.[2] C03B *5/02*

U.S. Cl. 65—135 14 Claims



5. Glass melting furnace comprising: (i) a melting section having glass melting means and at least one batch feed inlet to feed batch material to be melted to the surface thereof; (ii) a

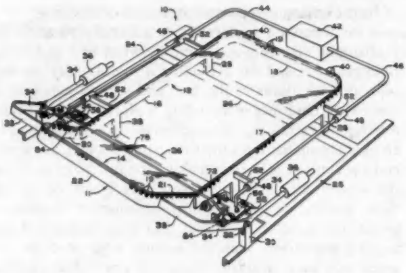
horizontally contiguous refining section in liquid communication with the melting section without a reduction in cross-section and having a bottom at a level substantially lower than that of the melting section whereby molten glass flows from the melting section into the refining section and then vertically downwardly therein in a nonturbulent stream; (iv) an outlet disposed in the lower portion of the homogenizing section for withdrawing the glass; (v) and electrical heating means comprising electrodes in at least one level around the periphery of the refining section.

4,184,864

APPARATUS FOR FABRICATING SHARPLY BENT GLASS SHEETS

Thomas J. Reese, Sarver, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 31, 1978, Ser. No. 929,382
Int. Cl.[2] C03B *23/02*
U.S. Cl. 65—285 **8 Claims**



1. Apparatus for shaping a glass sheet to a line of sharp bending comprising:

a mold support frame;

a gravity sag bending mold affixed to said frame having upwardly facing shaping surfaces defining the desired contour for the bent glass sheet, including two mold sections adjoining each other along the line of sharp bending, at least one mold section being mounted for pivoting motion with respect to the other mold section about an axis parallel to a line of intended sharp bending across a sheet of glass supported on said shaping surfaces;

an elongated, flexible, electrical resistance heating element extending across the mold closely adjacent and parallel to said line of sharp bending;

means for supplying electric current to the heating element;

support members rigidly carried on the mold support frame on opposite sides of the bending mold retaining an intermediate portion of the heating element at a predetermined elevation; and

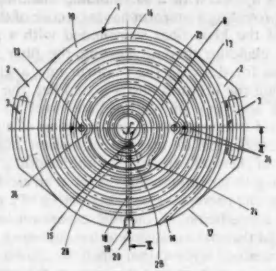
gravity biased means engaging an end of the heating element for applying tension along the length of the heating element, including a canted pivot arm, to one end portion of which a weight and the heating element are affixed, and the opposite end portion of which is pivotably affixed to the mold support frame, whereby the force of gravity on the weight maintains the intermediate portion of the ribbon taut between said support members, and the pivot arm retains the weight on the mold support frame in the event of heater element breakage.

4,184,865

MOUNTING PLATE FOR A COMPRESSION MOULD PART

Eberhard Liebal, Kronach, Fed. Rep. of Germany, assignor to Messrs. J. Walter Co. Maschinen GmbH, Kronach, Fed. Rep. of Germany

Filed Jul. 28, 1978, Ser. No. 928,863
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735530
Int. Cl.[2] C03B *11/12*
U.S. Cl. 65—319 **10 Claims**



1. A mounting plate for fixing the lower part of a compression mold on a carrier plate in a press for processing a heated material, the mounting plate having a top face, a bottom face, a coolant flow path means including a spiral coolant channel which runs substantially parallel to the bottom and top of said mounting plate from a first end at the central region of said mounting plate towards a second end at the periphery of said mounting plate, and a port means for said first end of said spiral coolant channel for connecting said spiral coolant channel to a source of coolant.

4,184,866

SUSTAINED RELEASE PESTICIDE COMPOSITIONS AND PROCESS FOR MAKING SAME

Humbert T. Dellicolli, and Peter Dilling, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed May 28, 1975, Ser. No. 581,634
Int. Cl.[2] A01N *17/08, 9/00*
U.S. Cl. 71—65 **2 Claims**

1. In a controlled release herbicide composition comprising, a herbicide physically dispersed throughout a modified lignin gel carrier, said herbicide being continually released under environmental conditions to generate an effective amount of herbicide, the weight ratio of herbicide-to-lignin gel carrier being from 0.01:1 to 1:1, the improvement residing in the lignin carrier which comprises,

reacting an aqueous solution of alkali lignin at a solids concentration of between 10% and 25% by volume with from 1 to 5 moles of epichlorohydrin at a temperature between 80° C. and 95° C. for from 5 minutes to 2 hours to form a cross-linked, reversibly swellable lignin gel.

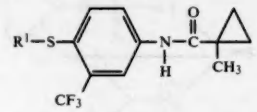
4,184,867

CYCLOALKANECARBOXANILIDE DERIVATIVE HERBICIDES

Kurt H. G. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 761,515, Jan. 21, 1977, abandoned. This application Feb. 10, 1978, Ser. No. 876,599
Int. Cl.[2] A01N *9/12, 9/14;* C07C *103/737*
U.S. Cl. 71—98 **5 Claims**

1. A compound of the formula



wherein R^1 is ethyl or isopropyl.

5. A method for controlling undesirable plant growth at a locus to be protected which comprises applying to the locus to be protected a herbicidally effective amount of a compound according to claim 1 or a composition thereof.

4,184,868

METHOD FOR PRODUCING EXTRA FINE COBALT METAL POWDER

Joseph E. Ritsko; Howard L. Acla; Clarence D. Vanderpool, all of Towanda; William Scheithauer, Jr., Sayre, and Geoffrey L. Harris, Monroeton, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 911,595, May 31, 1978, abandoned. This application Feb. 9, 1979, Ser. No. 10,769

Int. Cl.[2] C22B *23/04*

U.S. Cl. 75—0.5 **8 Claims**

1. A method for producing extra fine particle size cobalt metal powder, the method comprising:

(a) forming a solution of about 100 to 500 grams per liter of cobalt pentammine chloride having less than about 0.1 to 1 weight percent cationic impurities and less than about 1,000 parts per million of iron, in a 1 to 6 weight percent of ammonia solution;

(b) digesting the cobalt pentammine chloride solution for about 2 to 10 hours at a temperature of from about 80° to 100° C. in order to form a black precipitate;

(c) separating the black precipitate from the solution; and

(d) heating the black precipitate in a reducing atmosphere for a time and temperature sufficient to reduce the precipitate to extra fine particle size cobalt metal powder.

4,184,869

METHOD FOR USING FLUX AND SLAG DEOXIDIZER IN ESR PROCESS

Regis J. Leonard, Jr., Coopersburg, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Sep. 29, 1978, Ser. No. 947,139

Int. Cl.[2] C22B *4/00*

U.S. Cl. 75—10 C **8 Claims**

1. A method of electroslag melting a consumable electrode in a furnace having a cooled base and side walls to contain at least the initial melted product of said consumable electrode, said product being a ferrous alloy sensitive to hydrogen pickup and containing less than about 0.005%, by weight, aluminum, comprising the steps of establishing a layer of flux on said base, said flux comprising a mixture of CaF_2 and Al_2O_3 with up to 10%, by weight, of a mixture of SiO_2 and MnO, where the ratio of SiO_2/MnO varies between 5 and 1.5 to 1, melting said flux through resistance heating by means of an electric current flowing between said consumable electrode and said cooled base to form a pool of molten slag, introducing said consumable electrode into said pool of molten slag, melting said consumable electrode forming a pool of molten metal below said pool of molten slag, continuing the melting of said consumable electrode, and concurrent with the melting of said consumable electrode conditioning the pool of molten slag by the addition of a slag deoxidizer consisting essentially of CaSi, whereby the combination of said flux and said slag deoxidizer acts to minimize hydrogen and aluminum pickup in said product.

4,184,870

METHOD OF OBTAINING A NUMBER OF COPIES TRANSFERRED FROM ONE ELECTROSTATIC LATENT IMAGE

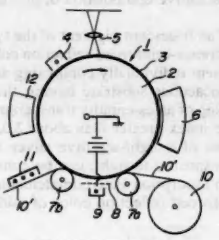
Yoshiro Suzuki, Hachioji, Japan, assignor to Olympus Optical Co., Limited, Toyko, Japan

Filed Dec. 28, 1977, Ser. No. 865,342

Claims priority, application Japan, Feb. 4, 1977, 52-10628

Int. Cl.[2] G03G *13/16, 15/16*

U.S. Cl. 430—53 **3 Claims**



1. A method of obtaining a number of copies transferred from one electrostatic latent image produced on an electric charge carrying member coated on an electrically conductive transfer body, comprising the steps of producing an electrostatic latent image charge on said transfer body, developing said electrostatic latent image charge into a toned picture image for each of the number of copies being transferred, applying a bias voltage between an electrically conductive screen arranged near a transfer receiving medium made in contact with the transfer body and the transfer body at the same time charging said transfer receiving medium through said electrically conductive screen with a corona source of ions so as to transfer said toned picture image produced on said transfer body to said transfer receiving medium.

4,184,871

PHOTOSENSITIVE COMPOSITION FOR ELECTROPHOTOGRAPHY

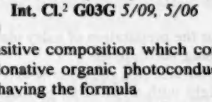
Hiroshi Oba, Yokohama; Tetsuo Murayama, Machida, and Shigenori Otsuka, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 565,941, Apr. 7, 1975, abandoned. This application Feb. 13, 1978, Ser. No. 877,501

Int. Cl.[2] G03G *5/09, 5/06*

U.S. Cl. 430—90 **9 Claims**

1. A photosensitive composition which consists essentially of an electron donative organic photoconductive compound and a sensitizer having the formula



wherein A represents a phenyl, naphthyl, anthryl, acenaphthyl, furyl or thienyl group each of which may be substituted by a group selected from the group consisting of chloro, bromo, alkoxy, nitro, cyano and alkoxycarbonyl; R represents a cyano, nitro, alkoxycarbonyl, aryl or carbamoyl group; and n is 0 or 1; wherein said composition is characterized in that its action spectrum extends to substantially longer wave lengths than the absorption spectrum of either said electron donative photoconductive compound alone or said sensitizer alone.

4,184,872
ADDITIVE SYSTEM OF COLOR PHOTOGRAPHY BASED ON IRIDESCENT PIGMENTS

Chester Davis, 1685 Atson La., Cincinnati, Ohio 45205

Continuation-in-part of Ser. No. 549,707, Feb. 13, 1975, Pat. No. 4,010,293, and a continuation-in-part of Ser. No. 549,706, Feb. 13, 1975, Pat. No. 4,065,158. This application Nov. 3, 1976, Ser. No. 738,449

Int. Cl.[2] **G03C** *1/72, 7/04, 1/68;* **C03C** *5/00*

U.S. Cl. 43—365 **23 Claims**

1. A photosensitive composition of matter which comprises a mixture of

particles of an iridescent pigment of the type which displays an interference-reinforced reflection color, the particles of said pigment individually comprising an essentially transparent micaceous substrate having thereon at least one overcoating of an essentially transparent material having a refractive index greater than about 2.0,

and particles of a light-sensitive silver compound which, through exposure to light, can be converted to particles having an absorption band complementary to the interference-reinforced reflection color of said of said iridescent pigment.

4,184,873
METHOD FOR THE PREPARATION OF A PLANOGRAPHIC PRINTING PLATE

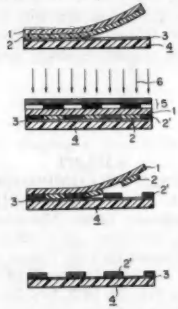
Atsumi Noshiro, Chiba; Minoru Takamizawa, and Yoshio Inoue, both of Annaka, all of Japan, assignors to Dai Nippon Printing Co. Ltd. and Shin-Etsu Chemical Co., Ltd., both of Tokyo, Japan

Filed Jan. 11, 1978, Ser. No. 868,544

Claims priority, application Japan, Jan. 18, 1977, 52-4335

Int. Cl.[2] **G03C** *11/12, 7/02;* **G03F** *7/10*

U.S. Cl. 430—258 **9 Claims**



1. A method for the preparation of a dry planographic printing plate comprising the steps of

(a) coating one surface of a substrate which is transparent to ultraviolet light with an uncured photocurable silicone,

(b) bringing the surface of the substrate thus coated into direct contact with a surface of a base plate which has been treated with a primer selected from the group consisting of vinyl tris(2-methoxyethoxy) silane, 3-glycidoxypropyl trimethoxy silane, N-(trimethoxysilylpropyl)ethylenediamine, 3-methacryloxypropyl trimethoxy silane, 3-aminopropyltriethoxy silane, mixtures thereof, and partial (co)hydrolyzates thereof to form a laminate,

(c) overlaying the other surface of the substrate in direct contact with an original transparency bearing an image pattern which is opaque to ultraviolet light,

(d) irradiating the laminate with ultraviolet light through the original transparency, and

(e) separating the substrate from the base plate to allow a portion of the photocured silicone coating transfer to the surface of the base plate, and a portion of the uncured silicone coating to stay in situ on the surface of the substrate.

4,184,874
PHOTOSENSITIVE COMPOSITION CONTAINING CHELATE COMPOUND

Keiji Takeda, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 5, 1975, Ser. No. 547,153

Claims priority, application Japan, Feb. 5, 1974, 49-14760

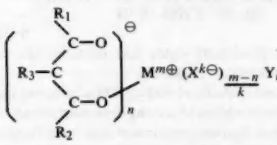
Int. Cl.[2] **G03C** *5/24, 1/02, 1/52*

U.S. Cl. 430—336 **13 Claims**

1. A method of forming a stable image comprising imagewise exposing to active light a photosensitive recording material which comprises a support having thereon a layer of photosensitive composition containing:

(a) at least one β-diketonato-metal chelate compound represented

by the following general formula (II)



(II)

wherein R_1 and R_2 and R_3 represent an aliphatic group, an aryl group, or a hetercyclic group; $M^{m\oplus}$ is a metal ion or a complex metal ion capable of forming a chelate compound with a β-diketone and m is an integer corresponding to the positive charge of the metal ion or the complex metal ion; $X^{k\ominus}$ is an anion; Y is a neutral ligand; k is an integer of 1 (one) to (m-n); n is an integer of 1 (one) to m; l is an integer of 0 to 3; and R_3 can be a hydrogen atom;

(b) at least one optical sensitizer; and

(c) a binder of synthetic or natural polymer, and heating said exposed material in order to either develop the latent image produced by said exposure or to intensify the visible image produced directly by said exposure.

4,184,875
PHOTOGRAPHIC REVERSAL PROCESS

Heinrich Odenwälder, Cologne, and Ubbo Wernicke, Odenthal, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Fed. Rep. of Germany

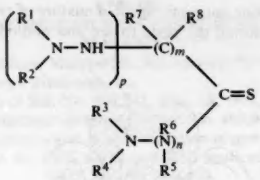
Filed Apr. 25, 1978, Ser. No. 899,993

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719371

Int. Cl.[2] **G03C** *5/50, 7/16*

U.S. Cl. 430—407 **4 Claims**

1. A process of producing a positive photographic image by imagewise exposure of photographic reversal material containing at least one silver halide emulsion, a first black and white development of the exposed material and subsequent treatment of the first developed material including a second development of the photographic material to form a positive reversal photographic image in the material wherein the improvement comprises uniform fog treatment of the first developed photographic material with an aqueous solution of a compound corresponding to the following formula



wherein

R^1, R^3=hydrogen, a saturated or olefinically unsaturated aliphatic group, aryl, a heterocyclic group or acyl;

R^2, R^4=hydrogen, a saturated or olefinically unsaturated aliphatic group, aryl or a heterocyclic group;

R^5=hydrogen;

R^6, R^7, R^8=hydrogen, a saturated or olefinically unsaturated aliphatic group, or aryl;

n=0 or 1;

m, p=0 or 1 but m and p must never have the same value;

and/or

R^1 and R^2 together and/or R^4 and R^3 together may represent an alkylidene group

and/or

R^6 and R^7 and R^8 together with the carbon atom, to which they are joined, represent a carbocyclic ring

and/or

R^2 together with R^4 or R^5 represent the group required for completing a 5-membered or 6-membered heterocyclic ring to form developable specks by chemical fogging in the unexposed and undeveloped silver halide of said material,

and then second developing the treated material with a second developer to form said positive reversal photographic images,

said compound being in an amount of about 0.5–1000 mg per liter of said solution,

whereby the processing produces in the treated emulsion layer a developed image having a density essential corresponding to that produced by a reversal process development in which the first developed material is uniformly exposed to light.

4,184,876

COLOR PHOTOGRAPHIC MATERIALS HAVING INCREASED SPEED

Alan G. Eeles, and Alan D. O'Neill, both of Chesham, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 594,840, Jul. 8, 1975, abandoned. This application Jan. 10, 1977, Ser. No. 758,251

Claims priority, application United Kingdom, Jul. 9, 1974, 30424/74

Int. Cl.[2] **G03C** *3/00, 1/76, 7/16*

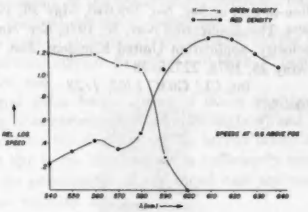
U.S. Cl. 430—505 **21 Claims**

1. In a multilayer, multicolor photographic element comprising a support having coated thereon dye-forming, hydrophilic colloid-containing silver halide emulsion layers which are spectrally sensitized to different regions of the visible spectrum, said element being comprised of at least one blue-sensitive emulsion layer, a yellow filter layer underlying said blue-sensitive layer, a plurality of green-sensitive silver halide emulsion layers and a plurality of red-sensitive silver halide emulsion layers; one of said green-sensitive emulsion layers being a faster green-sensitive layer and exhibiting a faster photographic speed than that of at least one other of said green-sensitive emulsion layers and one of said red-sensitive emulsion layers being a faster red-sensitive layer and exhibiting a faster photographic speed than that of at least one other of said red-sensitive emulsion layers;

the improvement comprising said faster green-sensitive emulsion layer and said faster red-sensitive emulsion layer being located in adjacent relationship to form a faster emulsion unit,

said one other, slower, green-sensitive emulsion layer and said one other, slower, red-sensitive emulsion layer being located in adjacent relationship to form a slower emulsion unit,

said slower emulsion unit being located between said faster emulsion unit and said support,



in each of said faster emulsion unit and said slower emulsion unit, said red-sensitive layer being positioned closer than said green-sensitive layer to said support, and

said blue-sensitive layer or layers being farther from the support than said faster emulsion unit.

4,184,877

PROCESS FOR THE MANUFACTURE OF PHOTOGRAPHIC SILVER HALIDE EMULSIONS CONTAINING SILVER HALIDE CRYSTALS OF THE TWINNED TYPE

Trevor J. Maternaghan, Brentwood, England, assignor to Ciba-Geigy AG, Basle, Switzerland

Continuation-in-part of Ser. No. 799,040, May 20, 1977, Pat. No. 4,150,994. This application Mar. 6, 1978, Ser. No. 884,065

Claims priority, application United Kingdom, Jun. 10, 1976, 24001/76; Feb. 16, 1978, 6090/78

Int. Cl.[2] **G03C** *1/02*

U.S. Cl. 430—567 **19 Claims**

1. A method of preparing a silver halide emulsion of the twinned type which comprises the steps of (a) forming in a colloid dispersing medium silver halide crystals containing at least 90 mole % iodide these said crystals being predominantly

of the hexagonal lattice structure, (b) mixing in the dispersing medium containing the said silver halide crystals an aqueous solution of a silver salt and an aqueous solution of an alkali metal or ammonium bromide or chloride or mixtures thereof so forming twinned silver halide crystals containing iodide and the halide or halides being added, the rate of addition of silver salt and alkali metal or ammonium bromide being so controlled that the silver halide crystals formed in this step are predominantly twinned and optionally (d) then causing the twinned crystals to increase in size by adding to the colloidal dispersion further aqueous silver salt solution and further alkali metal or ammonium halide and then finally optionally (e) removing the water-soluble salts formed and chemically sensitising the emulsion.

4,184,878

PROCESS FOR THE MANUFACTURE OF PHOTOGRAPHIC SILVER HALIDE EMULSIONS CONTAINING SILVER HALIDE CRYSTALS OF THE TWINNED TYPE

Trevor J. Maternaghan, Brentwood, England, assignor to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

Continuation-in-part of Ser. No. 799,040, May 20, 1977, Pat. No. 4,150,994. This application Nov. 30, 1978, Ser. No. 965,378

Claims priority, application United Kingdom, Jun. 10, 1976, 24001/76; May 25, 1978, 22728/78

Int. Cl.[2] **G03C** *1/02, 1/28*

U.S. Cl. 430—567 **21 Claims**

1. A method of preparing a silver halide emulsion of the twinned type which comprises the steps of (a) forming in a colloid dispersing medium silver halide crystals containing at least 90 mole % iodide, these said crystals being predominantly of the hexagonal lattice structure and then chemically sensitising the said silver halide crystals which contain at least 90 mole % iodide, (b) mixing in the dispersing medium containing the said silver halide crystals an aqueous solution of a silver salt and an aqueous solution of an alkali metal or ammonium bromide or chloride or mixtures thereof so forming twinned silver halide crystals containing iodide and the halide or halides being added, (c) adding a silver halide solvent to the dispersing medium and so causing the growth of the twinned crystals by Ostwald ripening, optionally (d) causing the twinned crystals to increase in size by adding to the colloidal dispersion further aqueous silver salt solution and further alkali metal or ammonium halide and then finally optionally (e) removing the water-soluble salts formed and chemically sensitising the surface of the silver halide crystals of the emulsion.

4,184,879

ENDODONTICAL TREATMENT PASTE

Jacques Ducos, and Jean-Pierre Duprez, both of Lyons, France, assignors to Laboratoire Spad, Quetigny, France

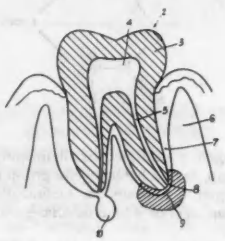
Filed Mar. 28, 1978, Ser. No. 891,040

Claims priority, application France, Apr. 20, 1977, 77 12649

Int. Cl.[2] **C09K** *3/00*

U.S. Cl. 106—35 **7 Claims**

1. An endodontical treatment paste, in particular for the root canal filling of teeth, comprising parachlorophenol camphor as a non-coagulating antiseptic agent, a mixture of zinc oxide and eugenol for causing the paste to set, and di-diodothymol for



retarding the setting of the paste to thereby reduce the ultimate hardness of the paste.

4,184,880

AQUEOUS POLYSILOXANE EMULSIONS WITH MICA TREATED WITH ORGANOSILICON COMPOUND

Peter Huber, and Jürgen Meusel, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 28, 1977, Ser. No. 819,734

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1976, 2641699

Int. Cl.[2] **B28B** *7/38;* **C08K** *9/06;* **C08G** *77/18*

U.S. Cl. 106—15.05 **4 Claims**

1. An aqueous emulsion containing a diorganopolysiloxane having a viscosity of at least 1000 cP at 25° C. and having mica dispersed therein which has a particle size of from 0.02 to 0.25 mm, said mica having been treated with an organosilicon compound selected from the class consisting of octamethylcyclotetrasiloxane, hydroxyl-terminated dimethylpolysiloxanes having from 2 to 12 siloxane units per molecule and silicon compounds having the formula

$$(R_3Si)_aZ \text{ and } R_{a'}SiZ'_{4-a'}$$

in which R is selected from the class consisting of monovalent hydrocarbon radicals having from 1 to 18 carbon atoms and halogenated hydrocarbon radicals, Z and Z′ are radicals selected from the class consisting of halogen, hydrogen, —OH, —OR′, —NR′X, —ONR′, —SR′, —OOCR′ and when a is 2, then Z is also selected from the class consisting of —O—, =NX and —S—, R′ is selected from the class consisting of a hydrocarbon radical and a substituted hydrocarbon radical, X is selected from the class consisting of hydrogen and R′, a is 1 or 2 and a′ is 1, 2 or 3.

4,184,881

JET PRINTING INK COMPOSITION CONTAINING AN ETHYLENE OXIDE ADDUCT OF ACETYLENIC DIOL

Edward T. Bradley, Appleton, Wis., assignor to M&T Chemicals Inc., Stamford, Conn.

Filed Jun. 12, 1978, Ser. No. 914,205

Int. Cl.[2] **C09D** *11/02*

U.S. Cl. 106—20 **4 Claims**

1. In a process for information recording comprising producing a fine jet of colored aqueous liquid, directing the jet of colored liquid onto a recording medium, modulating the density of the applied jet by an electric field in accordance with the information to be recorded, the improvement comprising the presence as a humectant of an ethylene oxide adduct of at least one acetylenic diol in the absence of any glycol or glycol ether.

4,184,882

SILICON NITRIDE-SILICON CARBIDE COMPOSITE MATERIAL

Frederick F. Lange, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 670,582, Mar. 25, 1976, abandoned, which is a continuation-in-part of Ser. No. 499,941, Aug. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 351,744, Apr. 16, 1973, abandoned. This application Dec. 13, 1977, Ser. No. 860,403

Int. Cl.[2] C04B *35/56*

U.S. Cl. 106—44 5 Claims

1. A composite material formed from sintering and densification under pressure of a mixture of silicon nitride (Si_3N_4) powder, silicon carbide (SiC) powder and an effective amount of a densification aid, the silicon carbide powder being present in the mixture in an amount less than 40 percent by volume and having an average particle size not exceeding about 5 microns, the mixture containing less than about 200 ppm calcium, the densified composite material characterized by improved high temperature flexural strength and thermal conductivity relative to sintered silicon nitride.

4,184,883

PITCH BONDED REFRACTORY

Ronald H. Hughes, Clearfield, and Robert Morena, Irvona, both of Pa., assignors to Eltra Corporation, Toledo, Ohio

Filed Dec. 17, 1976, Ser. No. 751,399

Int. Cl.[2] C04B *35/52*

U.S. Cl. 106—56 10 Claims

1. A pitch bonded refractory consisting essentially of discrete, sized graded aggregate particles, pitch, and a cure accelerator for the pitch, said cure accelerator being magnesium hydroxide, magnesium nitrate, calcium nitrate, zinc nitrate, ferrous nitrate, ferrous sulfide, magnesium carbonate, ferric oxide, ferrosoferric oxide or ferrous sulfate, and constituting from $\frac{1}{2}$ to 2 percent of refractory, based upon the weight of the aggregate, and the pitch constituting from about 3 to 12 percent based upon the weight of the aggregate, and being operative as a binder bonding the discrete size graded aggregate particles to one another.

4,184,884

PROCESS FOR PRODUCING A METASTABLE PRECURSOR POWDER AND FOR PRODUCING SIALON FROM THIS POWDER

Bing W. Jong, Northport, Ala., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 23, 1978, Ser. No. 953,393

Int. Cl.[2] C04B *35/50, 35/58*

U.S. Cl. 106—73.2 13 Claims

1. A process for producing sialon comprising:

(a) producing a metastable precursor powder by nitriding a mixture of about 97.0 to 77.4 mole percent of silicon, about 1.5 to 11.3 mole percent of alumina and about 1.5 to 11.3 mole percent of aluminum nitride at a temperature and for a time sufficient to convert about 20 to 60 percent of the silicon to the nitride form,

(b) doping said precursor powder with an additive present in an amount sufficient to promote sintering,

(c) cold pressing or slip casting the doped powder, and

(d) sintering the cold pressed or slip cast powder under a nitrogen atmosphere at a temperature and for a time sufficient to produce a substantially single phase of sialon, said nitrogen atmosphere being at a pressure sufficient to prevent sialon decomposition.

11. The process of claim 1 wherein the doping additive is an oxide of yttrium or of an element of the Lanthanide series.

4,184,885

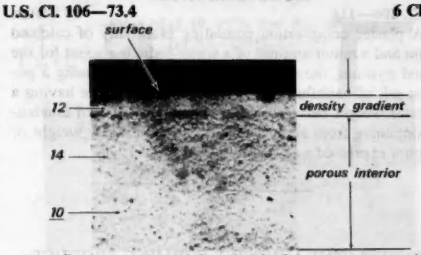
ALUMINA CORE HAVING A HIGH DEGREE OF POROSITY AND CRUSHABILITY CHARACTERISTICS

Wayne D. Pasco, Ballston Spa, and Frederic J. Klug, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 25, 1979, Ser. No. 6,279

Int. Cl.[2] C04B *35/00*

U.S. Cl. 106—73.4 6 Claims



1. A fired ceramic article suitable for use as a core in the investment casting of the directionally solidified eutectic and superalloy material consisting essentially of

a porous body of alumina ceramic material having a continuous porosity content by volume of from 20 percent to 65 percent, and

an integral outer barrier layer of dense alumina material having a continuous porosity throughout and a density gradient for the thickness of the barrier layer, wherein

the pore size in the barrier layer is sufficiently small to prevent the penetration of any metal cast and solidified in contact with the article.

4,184,886

METHOD OF CONDITIONING HOT GASES FOR FILTRATION

Karl Ellingen, and Wolfgang Gaumert, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed May 25, 1978, Ser. No. 909,675

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724372

Int. Cl.[2] C04B *7/44*

U.S. Cl. 106—100 14 Claims

1. The method of reducing the dust and alkali content of exhaust gases in a cement plant having a heated drying kiln fed from a series of cyclone separators with pulverized raw cement making material in counter current flow relation with hot gases from the kiln and electrofilters for filtering the dust and alkali laden hot gases which comprises passing some of the gases from the first cyclone separator through a vaporization cooler, introducing a medium into the cooler having a lower temperature and a higher dew point temperature than said gases, reducing the temperature and raising the dew point of said gases in the cooler, condensing alkali vapors from said gases on dust particles in the gases, separating the alkali coated dust from the cooled gases at the bottom of the cooler, passing some of the gases from the first cyclone separator through a grinding mill, comminuting solid particles entrained in said gases in the grinding mill, feeding the gases from the bottom of the vaporization cooler and the grinding mill to an electrofilter, drying filtered gases from the electrofilter, feeding filtered gases to a mixing chamber, feeding hot gases from the kiln to the mixing chamber, injecting water into the mixing chamber, reducing the temperature and raising the dew point of the gases in the mixing chamber, feeding the mixed gases from the mixing chamber to another electrofilter, heating raw cement making material with the purified mixed exhaust gases from the other electrofilter, and discharging the purified gases.

4,184,887

PLASTER COMPOSITION CONTAINING WATER-REDUCING AGENT

Robert G. Lange, Villa Park, Ill., and Harley L. Schlotthauer, Okeene, Okla., assignors to United States Gypsum Company, Chicago, Ill.

Filed Apr. 6, 1978, Ser. No. 893,853
Int. Cl.[2] C04B 11/14
U.S. Cl. 106—111 13 Claims

1. A plaster composition consisting essentially of calcined gypsum and a minor amount of a water-reducing agent for the calcined gypsum, the water-reducing agent comprising a potassium salt of naphthalene sulfonic acid condensate having a molecular weight between about 300 and 3,000, said condensate containing from about 0.10% to about 30% by weight of potassium expressed as potassium oxide.

4,184,888

EFFERVESCENT ADHESIVE-FORMING PRODUCT

Hani F. Zoumut, Xenia, Ohio, assignor to DAP Inc., Dayton, Ohio

Filed Mar. 1, 1978, Ser. No. 882,534
Int. Cl.[2] A61K 9/46; C08L 1/26
U.S. Cl. 106—178 9 Claims

1. An article of manufacture adapted to prepare a holding adhesive solution comprising a hermatically-sealed, moisture-proof package containing a premeasured amount of a composition comprising:

20–50% of a water-soluble polymeric adhesive base; and

45–80% of a compatible effervescent source consisting essentially of an acid component and a carbonating component

whereby the acid component and the carbonating component are present in amounts sufficient to afford a water solution of approximatley pH 3.5–9.5.

4,184,889

FLY, LINE AND LEADER SINKER COMPOSITION

George E. Gehrke, Drawer 1204, Salida, Colo. 81201

Filed May 25, 1978, Ser. No. 909,667
Int. Cl.[2] C08L 91/00
U.S. Cl. 106—267 4 Claims

1. A composition of the matter to be applied to a fly, line or leader to cause same to sink below the surface of the water when cast by a fisherman which comprises about four parts by volume of a surface active agent consisting of the non-ionic reaction products of ethylene oxide with nonyl phenol, about one part by volume of sorbitan monolaurate and about ten parts by weight of a medium grade mineral oil blended together.

4,184,890

ELEMENTAL SULFUR HAVING IMPROVED IMPACT RESISTANCE

Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Corporation, Newtown, Pa.

Division of Ser. No. 714,162, Aug. 13, 1976, Pat. No. 4,097,299. This application Apr. 6, 1978, Ser. No. 893,866
Int. Cl.[2] C07G 17/00; C08G 75/00
U.S. Cl. 106—287.26 10 Claims

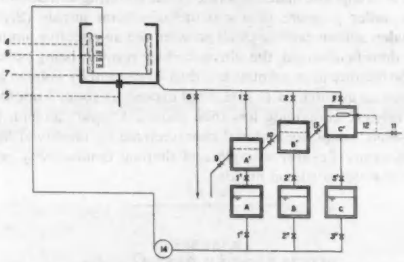
1. A composition of matter which is a copolymer comprising the product of the reaction in the molten state of elemental sulfur and from 2 to 50 parts per hundred of a liquid polyether-polysulfide polymer having terminals non-oxidatively curable by sulfur.

4,184,891

PROCESS FOR WASHING A SOLID SUBSTANCE IMPREGNATED WITH A LIQUID SUBSTANCE

François A. Pollozec, and Michel Nouaillant, both of Bergerac, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jun. 13, 1977, Ser. No. 805,792
Claims priority, application France, Jun. 16, 1976, 76 18225
Int. Cl.[2] B08B 7/04
U.S. Cl. 134—10 3 Claims



1. A process of washing a solid product impregnated with a liquid substance which must be removed by contacting said solid product with a washing liquid, which comprises subjecting said product to sequences of successive washing operations comprising at least a first and a last washing operation in a washing zone and wherein:

(1) in the course of each sequence the successive washing operations are carried out with a washing liquid from a plurality of successive washing circuits, each circuit including at least one plugged tank external to the washing zone and at least one reservoir external to the washing zone, each circuit corresponding to a separate washing operation, the content of the substance to be eliminated therein decreasing from the first washing operation towards the last washing operation;

(2) during each sequence a quantity of liquid rich in the substance to be eliminated is removed from the washing liquid used during the first washing operation and an equivalent amount of the liquid free of the substance to be eliminated is introduced into the washing liquid used during the last washing operation;

(3) during each washing operation of the same sequence a quantity of washing liquid is used, the quantity of liquid rich in the substance to be eliminated in step (2) being small with respect to the quantity of washing liquid in step (3), a substantial quantity of the washing liquid being recovered to carry out the corresponding washing operation during the following sequence and with the exception of the first washing operation, a small quantity of this washing liquid is transferred into the washing liquid corresponding to a preceding washing operation of the same sequence whereby the content of the substance to be eliminated is maintained constant in said washing liquid in each circuit for the following sequence;

(4) each washing operation is carried out with a substantial quantity of washing liquid, said washing liquid being almost totally recovered in order to carry out the washing;

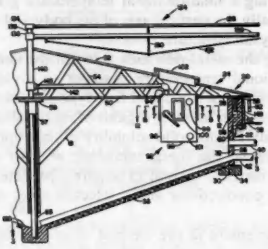
(5) the product to be washed being subjected to discontinuous washing operations by successively transferring the washing liquid into contact with the product in the washing zone from each reservoir and recycling said washing liquid to a plugged tank in the same circuit.

4,184,892

ORGANIC DIGESTER APPARATUS AND METHOD

Jay Anderson, P.O. Box 585, Elkhart, Ind. 46514

Division of Ser. No. 595,176, Jul. 11, 1975, Pat. No. 4,046,551.
This application Jul. 1, 1977, Ser. No. 812,144
Int. Cl.[2] B08B *9/00, 9/04, 3/00*
U.S. Cl. 134—24 7 Claims



1. A method of washing inside surfaces of an organic digester of the type having both a wall member and a movable roof member, which method comprises:

(a) maintaining liquid between the wall member and the roof member, thereby maintaining a gas-tight seal therebetween, and thereby maintaining the exclusion of oxygen from the digester;

(b) supporting the roof member with means which comprises pressurized gas;

(c) removing substantially all organic material from the digester; and

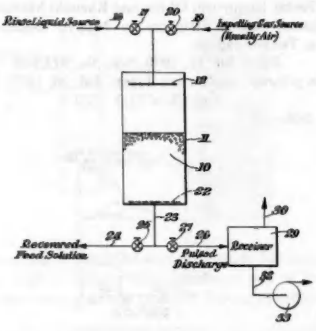
(d) directing water against the inside surfaces of the digester.

4,184,893

PULSED RINSE OF PARTICULATE BEDS

David O. Halvorson, Beaumont, Tex., and Walter J. Sloan, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 13, 1976, Ser. No. 704,972
Int. Cl.[2] B08B *5/00*
U.S. Cl. 134—25 R 2 Claims



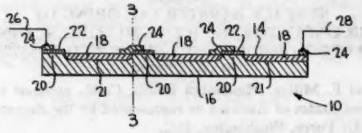
1. A process for removing the void volume of process liquid from a wetted, fixed or stabilized bed of particulate solids comprising, in sequence: (a) downward blowing said fixed or stabilized bed of solids with a gas to displace a substantial portion of said process liquid from said voids, (b) quickly adding a preselected volume of rinse liquid at a preselected temperature over the entire top of said bed, said preselected volume being limited to a fraction of the total volume of said bed of solids, (c) quickly downward blowing said bed of solids with a gas to impel said rinse liquid through said bed, and (d) repeating steps (b) and (c) until the desired degree of removal of said void-retained process liquid is effected, or until the sum of said rinse liquid volumes (b) is approximately equal to the total volume of said bed of solids.

4,184,894

INTEGRATED PHOTOVOLTAIC GENERATOR

Joseph Lindmayer, Bethesda, and Charles Y. Wrigley, Gaithersburg, both of Md., assignors to Solarex Corporation, Rockville, Md.

Filed May 19, 1978, Ser. No. 907,621
Int. Cl.[2] H01L *31/06*
U.S. Cl. 136—89 MS 7 Claims



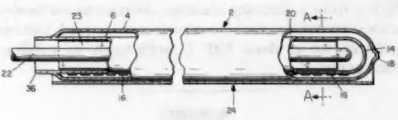
1. A photovoltaic generator capable of producing a voltage greater than that generated by a single photovoltaic cell of comparable chemical composition, the generator comprising a wafer of semiconductor material having two major surfaces, at least one of the major surfaces including a plurality of discrete areas containing an impurity of one type of conductivity, at least a portion of the remainder of the wafer contiguous to said discrete areas containing an impurity of an opposite conductivity type, said discrete areas being at least partially covered by a layer of oxide, and electrical conductor means between at least one said discrete area and said contiguous portion of the wafer containing the impurity of the opposite conductivity type and overlying and penetrating through a portion of said oxide layer.

4,184,895

STRUCTURE FOR CONVERSION OF SOLAR RADIATION TO ELECTRICITY AND HEAT

Eugene A. Oster, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 19, 1978, Ser. No. 917,123
Int. Cl.[2] H01L *31/04;* F24J *3/02*
U.S. Cl. 136—89 FC 9 Claims



1. A device adapted to produce both electrical energy and thermal energy from sunlight, comprising

a radiation collection and concentration medium in the form of a first elongated light conducting tubular inner member having (a) a continuous wall defining an elongated passage and (b) a first, open end,

said medium containing at least one luminescent species capable of emitting luminescent radiation upon excitation with solar radiation, said medium being totally internally reflective of a major portion of said emitted luminescent radiation,

means closing the second end of the elongated passage of said first member, said first member being curvilinear in any transverse cross-section,

a second elongated tubular light conducting outer member having a wall that is closed at one end and surrounds the wall of said first member,

means joining the wall of said second member and the wall of the first member adjacent said first, open end of the

latter, thereby sealing a thermally insulative space between said first member and said second member, said space being evacuated to a sub-atmospheric pressure,

photocell means responsive to said emitted radiation optically coupled to a minor proportion of the exterior surface of said wall of said first member and disposed within said sub-atmospheric space, and

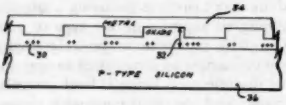
means within the elongated passage of said first member for absorbing electromagnetic radiation as thermal energy and for extracting heat from said passage through said first, open end thereof.

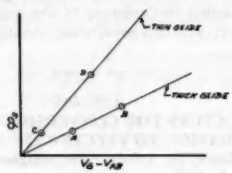
4,184,896

SURFACE BARRIER TAILORING OF SEMICONDUCTOR DEVICES UTILIZING SCANNING ELECTRON MICROSCOPE PRODUCED IONIZING RADIATION

Michael F. Millea, Manhattan Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 6, 1978, Ser. No. 913,186
Int. Cl.[2] H01L *21/26, 21/324, 29/78*
U.S. Cl. 148—1.5 **1 Claim**





1. In metal-oxide-silicon semiconductor devices, a method of spatially tailoring the surface barrier charge comprising; the steps of exposing trapped positive charges in silicon dioxide at a silicon dioxide—silicon interface to a heavy dose of ionizing radiation from a scanning electron microscope, whereby the electrical potential at the silicon surface is lowered; and annealing the device at about 300° C. sufficiently to stabilize the surface potential.

4,184,897

DROPLET MIGRATION DOPING USING CARRIER DROPLETS

Thomas R. Anthony, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,280
Int. Cl.[2] H01L *21/225*
U.S. Cl. 148—1.5 **10 Claims**

1. In the method of moving a melt of metal-rich semiconductor material through a solid body of silicon semiconductor material by thermal gradient zone melting processing comprising the steps of

a. selecting a body of single crystal semiconductor material so that the body has a first type conductivity, a selected resistivity, and at least one major surface having a preferred planar crystal structure orientation which is one selected from the group consisting of (100), (110) and (111), the vertical axis of the body being substantially aligned with a first axis of the crystal structure;

b. preparing the surface having the preferred planar crystal structure orientation to accommodate one or more physical configurations of a layer of metal thereon;

c. vapor depositing a layer of metal on the selected surface of the body of semiconductor material;

d. heating the body and the metal deposit to a temperature sufficient to form a melt of metal-rich material on the surface of the body;

e. establishing a unidirectional temperature gradient along substantially the vertical axis of the body and the first axis of the crystal structure;

f. migrating the metal-rich melt through the body along the unidirectional temperature gradient to divide the body into a plurality of regions of first type conductivity and to form at least one array of regions of recrystallized material of the body having solid solubility of the vapor deposited metal therein, the metal including at least one dopant impurity material therein to impart a predetermined second type conductivity and a selected level of resistivity thereto;

the improvement in the method of processing which includes

vapor depositing a layer of metal which comprises a first material which includes at least a first metal which improves physical properties of the melt such as the penetration of the melt, when formed, into the surface of the body, increases stability of the migration of the melt through the body, and increases the rate of melt migration through the body, the at least one first metal is one selected from the group consisting of aluminum, gallium, indium and magnesium, and

a second material which includes at least a second metal which imparts to the recrystallized region predetermined electrical characteristics of conductivity type, level of resistivity, and control of lifetime and the like, and

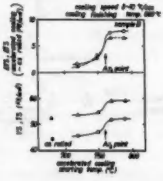
the temperature gradient zone melting is practiced at a temperature greater than the temperature at which intermetallic compounds are formed by the material of the semiconductor body and the at least one first metal.

4,184,898

METHOD OF MANUFACTURING HIGH STRENGTH LOW ALLOYS STEEL PLATES WITH SUPERIOR LOW TEMPERATURE TOUGHNESS

Chiaki Ouchi; Tomoyoshi Okita, and Kazuaki Matsumoto, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,500
Claims priority, application Japan, Jul. 20, 1977, 52-85980
Int. Cl.[2] C21D *1/20*
U.S. Cl. 148—12 F **7 Claims**



1. A method of manufacturing high tensile strength and high toughness steel plates comprising the steps of

reheating a steel slab or bloom comprising containing 0.03~0.15% by weight of C, 0.04~0.60% by weight of Si, 0.60~2.5% by weight of Mn, 0.010~0.15% by weight of Nb, 0.005~0.10% by weight of soluble Al and the remainder iron to a temperature above 1050° C. and below the reheating temperature at which the austenite grain size would be 150μ or higher,

hot rolling the heated steel slab or bloom in the temperature range between the temperature at which recrystallization of the austenite grains begins and the Ar_3 transformation

point temperature sufficient to obtain a total reduction by said rolling of more than 40% with reference to the finished thickness,

acceleratedly cooling said hot rolled steel at a rate of 5°~20° C./sec. from a temperature higher than Ar_3 transformation point to a temperature within 550°~650° C., and

then air cooling said hot rolled steel.

4,184,899

METHOD OF SURFACE HARDENING STAINLESS STEEL PARTS

Amos Bias, Ramat Gan, and Baruch Rabin, Rechovot, both of Israel, assignors to Israel Aircraft Industries Ltd., Ben Gurion Int'l Airport, Ltd., Israel

Filed Jul. 20, 1978, Ser. No. 926,434

Claims priority, application Israel, Jul. 25, 1977, 52591

Int. Cl.[2] C21D *1/48*

U.S. Cl. 148—15.5 **9 Claims**

1. A method of surface hardening stainless steel parts for increasing their wear and fatigue resistance, comprising:

(a) subjecting the surface of the stainless steel part to a pre-treatment in a salt bath containing, by weight, 0.1–0.5% sulphur, 4–30% of a cyanide, and 10–50% of a cyanate, the balance being mainly non-active carrier agents, for a time period of a few minutes to two hours, at a temperature of 540–600° C.; and

(b) then subjecting the stainless steel part to a nitriding process; said pre-treatment of step (a) inhibiting the formation of an oxide film while the nitriding process of step (b) is carried out.

4,184,900

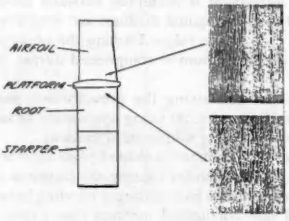
CONTROL OF MICROSTRUCTURE IN CAST EUTECTIC ARTICLES

John S. Erickson, Colchester; Earl R. Thompson, Glastonbury, and Patrick M. Curran, Tolland, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 577,260, May 14, 1975, abandoned. This application Sep. 2, 1977, Ser. No. 830,254

Int. Cl.[2] C22C *19/03*

U.S. Cl. 148—32 **4 Claims**



1. A directionally solidified eutectic article having at least one portion with a cellular microstructure and at least one further portion having a fully oriented fibrous microstructure.

4,184,901

SIMULTANEOUS YELLOW SMOKE AND YELLOW FLAME COMPOSITION CONTAINING BISMUTH SUBNITRATE

John E. Tanner, Jr., Bloomington, and Henry A. Webster, III, Ellettsville, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 21, 1978, Ser. No. 935,423

Int. Cl.[2] C06B *45/10*

U.S. Cl. 149—19.6 **8 Claims**

1. A pyrotechnic composition for simultaneously producing yellow smoke and yellow flame comprised, by weight, of

between 5 and 30 percent of a fuel selected from a group consisting of magnesium and silicon,

between 65 and 85 percent of bismuth subnitrate, and

between 5 and 13 percent of an epoxy binder.

4,184,902

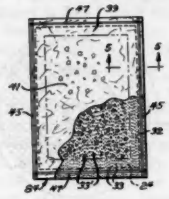
METHOD OF MAKING AN ABSORBENT ARTICLE

Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 799,638, May 23, 1977, abandoned, which is a continuation of Ser. No. 697,076, Jun. 16, 1976, abandoned, which is a division of Ser. No. 552,463, Feb. 24, 1975, Pat. No. 3,994,299. This application Dec. 22, 1977, Ser. No. 863,482

Int. Cl.[2] A61F *13/18*; B32B *7/14*

U.S. Cl. 156—85 **8 Claims**



1. A method of making an absorbent article, comprising the steps of:

perforating a film of thermoplastic material;

placing the perforated film and a sheet of fluid pervious material against a surface of an absorbent pad with the film located intermediate the sheet and pad; and

heating the sheet and film in a region of the sheet and film adjacent the pad surface and spaced from marginal edges of the pad to enlarge perforations in said region of the film while leaving a substantially fluid impervious border around the edges of the pad.

4,184,903

METHOD OF FABRICATING A PHOTOVOLTAIC MODULE OF A SUBSTANTIALLY TRANSPARENT CONSTRUCTION

Alan M. Lovelace, Acting Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Paul A. Dillard, Sunnyvale; Walter M. Fritz, Santa Clara, and Dan R. Lott, San Jose, all of Calif., assignors to The United States of America, as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 26, 1978, Ser. No. 928,133

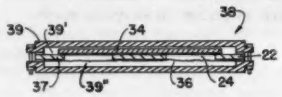
Int. Cl.[2] B32B *31/20*; B25B *11/00*

U.S. Cl. 156—104 **9 Claims**

1. In a method of fabricating a transparent photovoltaic module wherein a plurality of electrically interconnected solar cells are bonded to a rigid transparent support panel, the step of:

depositing on one face of each solar cell of a plurality of electrically interconnected solar cells a film of substantially transparent adhesive, positioning said one face of

each cell in contiguous relation with a common surface of a substantially transparent support panel and simultaneously vacuum-bonding said plurality of cells to the panel.

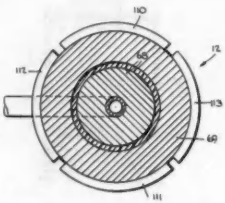


4,184,904

METHOD FOR PRODUCING SHEET MATERIAL

William Gaffney, New York, N.Y., assignor to Charlotte Mintz, New York, N.Y.

Filed Nov. 8, 1977, Ser. No. 849,597
Int. Cl.[2] A63B *41/00*
U.S. Cl. 156—145 14 Claims



1. A method of making a bilaminar sheet material having uniform thickness which comprises:

(a) extruding a molten thermoplastic material through an annular slotted extrusion means,

(b) extruding the thermoplastic material through the annular slotted extrusion means such that said molten material forms a generally tubular hollow element having a plurality of linear side wall portions, each of said side wall portions having a constant thickness along its entire length, a number of said linear side wall portions having unequal thicknesses relative to other side wall portions,

(c) discharging a gas at a slight positive pressure into said element as it is formed whereby said gas fills said element,

(d) passing said tubular hollow element containing said gas between two juxtaposed parallel cylindrical rollers,

(e) rotating said rollers in opposite directions so as to draw said tubular hollow element into the nip between the rollers, at least one of said rollers having a plurality of spaced apart recesses on its outer surface, whereby said tubular hollow element is collapsed and flattened into a continuous bilaminar planar sheet element with raised closed pockets containing said gas, the opposed flattened surfaces of said element being autogenously welded to each other in the areas of contact,

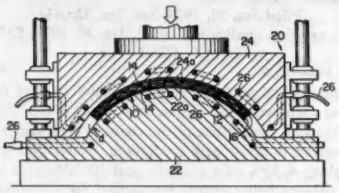
(f) maintaining the temperature of the thermoplastic material around the annular slotted extrusion means by means of a plurality of heater elements positioned around and in close proximity to the annular slot, the plurality of heater elements comprising four heater elements, said four heater elements comprising a first pair of oppositely positioned heaters and a second pair of oppositely positioned heaters around said annular slot, the first pair of heater elements being substantially parallel to the horizontal axis of said juxtaposed parallel rollers and said second pair of heater elements being substantially perpendicular to said horizontal axis of said juxtaposed roller.

4,184,905

HEAT AND SOUND INSULATOR OF CURVED CORRUGATED PAPERBOARD AND METHOD OF SHAPING SAME

Mitsutoshi Ogata, and Norinao Naito, both of Fukuoka, Japan, assignors to Nissan Motor Company, Limited, Yokohama and Fukuoka Paper Company, Limited, Fukuoka, both of, Japan

Continuation of Ser. No. 686,314, May 14, 1976, Pat. No. 4,093,482. This application Mar. 20, 1978, Ser. No. 888,039
Claims priority, application Japan, May 15, 1975, 50/58137
The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.
Int. Cl.[2] B32B *3/28*
U.S. Cl. 156—221 2 Claims



1. A method of producing a heat and sound insulating plate member which is made of corrugated paperboard and has at least one permanently curved portion, the method comprising the steps of:

applying external heat to a corrugated paperboard which has the shape of a flat plate and comprises a layer of corrugated medium of paper and two sheets of paper liners arranged to sandwich said corrugated medium therebetween, said liners having been bonded to said corrugated medium with a thermoplastic resin, said external heat being sufficient to raise the temperature of said thermoplastic resin above the softening point thereof so that said resin fluidizes;

press-forming said corrugated paperboard to a desired shape having at least one permanently curved portion by continued application of said external heat through dies and by compressing said corrugated paperboard whereby strain-relieving movement is permitted between each of said liners and said corrugated medium and whereby the top region of each of the ridges forming the corrugations of said corrugated medium is compressed during the press-forming;

and then while maintaining the press-formed paperboard between said dies, discontinuing application of said external heat and allowing said resin to harden,

whereby there is produced a shaped plate member that is free from internal strains causing spontaneous deformation thereof, and that has a stronger bonding between said liners and said corrugated medium than existed in said corrugated paperboard prior to the method being carried out.

4,184,906

METHOD OF MAKING ASBESTOS-CEMENT LAMINATES

Jason C. Young, Lynfield, New Zealand, assignor to James Hardie & Coy Pty. Limited, Sydney, Australia

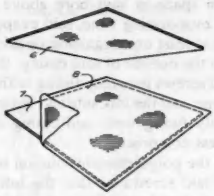
Filed Apr. 28, 1978, Ser. No. 901,364
Claims priority, application Australia, May 3, 1977, PC9961
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—299 12 Claims

1. A method of producing a laminate slab comprising a plurality of cured asbestos-cement sheets facially joined together, the method comprising the steps of:

(a) forming a stack of initially set but incompletely cured asbestos-cement sheets with at least one solid plastic bond-

ing film sandwiched between two sheet surfaces to be joined,

(b) arranging said stack within an autoclave vessel and subjecting the stack within the autoclave to stream under pressure sufficient to render the film fluid and simultaneously to complete curing of the asbestos-cement sheets, and



(c) during curing within the autoclave vessel applying a compressive distributed loading to said stack imposed on it in the direction normal to said bonding film,

thereby to form a laminate slab in which said sheets are completely cured and bonded together by said film.

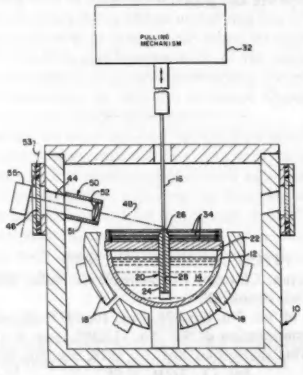
8. A method according to claim 1 wherein said slab consists of a base sheet of asbestos-cement having a number of smaller asbestos-cement sheets joined to at least one face thereof.

4,184,907

CONTROL OF CAPILLARY DIE SHAPED CRYSTAL GROWTH OF SILICON AND GERMANIUM CRYSTALS

Douglas A. Yates, Burlington, Mass., assignor to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Mar. 17, 1977, Ser. No. 778,589
Int. Cl.[2] B01J *17/18*
U.S. Cl. 156—601 **5 Claims**



1. A method of growing a ribbon shaped crystalline body of silicon or germanium so that said body has a selected cross-sectional shape for a selected distance along its length, said material being at least partially reflective to radiation at a preselected wavelength, said method comprising growing and pulling said crystalline body from a growth pool of melt supplied by a capillary die and replenishing said growth pool with melt provided from a reservoir supply of melt, said body and said growth pool of melt forming a solid/liquid interface above said die and said growth pool being characterized by a meniscus which extends from said die and joins said body at said interface to form a solid/liquid/vapor junction at which the liquid surface of said meniscus intersects the solid surface of said body at a predetermined meniscus angle when the growth of said crystalline body is under steady state conditions, said method further comprising:

observing preselected points on at least the portion of the surfaces of said body and said meniscus adjacent said junction for the quantity of radiation of said preselected wavelength reflected and emitted from each of said points in a direction substantially perpendicular to the meniscus surface formed at said junction when the growth of said crystalline body is under steady state conditions;

determining which of the observed points exhibit a sharp change in the amount of reflected radiation of said preselected wavelength; and

controlling the speed at which said body is being pulled or the temperature of said growth pool of melt so as to maintain those points exhibiting said sharp change at a preselected spatial position relative to a predetermined reference position.

4,184,908

METHOD FOR POLISHING CADMIUM SULFIDE SEMICONDUCTORS

Anne M. Lackner, Los Angeles, and Phillip G. Reif, Chatsworth, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 5, 1978, Ser. No. 949,282
Int. Cl.[2] H01L *21/306*
U.S. Cl. 156—636 **7 Claims**

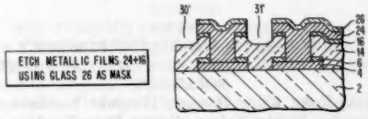
1. A process for preparing a haze-free cadmium sulfide surface on a substrate by polishing which comprises subjecting said surface to the polishing action of a solution containing submicroscopic silica and simultaneously, while polishing, etching said surface with an iodine solution, and then cleaning said surface before said iodine solution dries on said surface.

4,184,909

METHOD OF FORMING THIN FILM INTERCONNECTION SYSTEMS

Kenneth Chang, Hopewell Junction; David C. Cosman, Newburgh; Helmut M. Gartner, and Anthony J. Hoeg, Jr., both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,286
Int. Cl.[2] C23F *1/02*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **19 Claims**



1. A method for fabricating thin film interconnection systems atop a substrate comprising:

depositing a first thin film on a substrate;

depositing a second thin film on said first thin film;

said first and second films being selectively etchable with respect to each other;

forming a first resist layer on said second thin film;

forming openings through said first resist layer and second thin film extending to said first thin film, thereby exposing selected portions of said first thin film;

etching the exposed portions of said first thin film by using said second thin film as a mask, whereby the remaining first thin film is in a desired pattern;

depositing a third thin film having the same etching characteristics as said second thin film atop said second thin film;

depositing a fourth thin film atop said third thin film;

said third and fourth films being selectively etchable with respect to each other;

forming a second resist layer on said fourth thin film;

forming openings through said second resist layer and fourth

thin film extending to said third thin film, thereby exposing selected portions of said third thin film; and

etching the exposed portions of said third and second thin films using said fourth thin film as a mask, whereby selected portions of said first thin film are exposed.

4,184,910

SURFACE-TEXTURE FILMWORK GENERATION

Stephen G. Mearig, Columbia, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Oct. 10, 1978, Ser. No. 949,750

Int. Cl.[2] C23F *1/02*

U.S. Cl. 430—323 **1 Claim**

1. A method for forming a three-dimensional surface wherein the initial three-dimensional surface has been formed in a series of steps using a coventional chemical etching process wherein a plurality of photographs of a model are sequentially exposed to a plurality of resist coating to form the general shape of the three-dimensional configuration of the model in a series of steps, the improvement comprising:

(a) making a rubbing of the surface of the model, said rubbing forming a reproduction of the surface contour of the model with the different levels of the contour being represented by various tones of a single color,

(b) making a series of negatives of the rubbing through the use of a film type and photographic conditions which yield a series of negatives that show different levels of texture for the model, and

(c) using at least parts of said negatives to form images in a series of resist coatings on the step-like etched surface to provide said step-like etched surfaces with a texturing of the flat areas of the etched surface by a chemical etching operation.

4,184,911

PROCESS FOR PRODUCING POWDERY POLYCARBONATE FROM A POLYCARBONATE SOLUTION

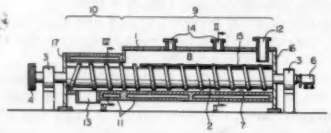
Hiroyuki Koda; Kunio Hamaya; Hiroyuki Yoshizaki, all of Toyonaka; Yutaka Kojima, Osaka; Shiro Tsuchiya, Nara; Shinichi Fukuda, Nishinomiya, and Takashi Ikeno, Takatsuki, all of Japan, assignors to Mitsubishi Gas Chemical Company, Tokyo and Hitachi Shipbuilding & Eng. Co., Ltd., Osaka, both of, Japan

Filed Jun. 7, 1978, Ser. No. 913,315

Claims priority, application Japan, Jun. 13, 1977, 52-68860; Jun. 14, 1977, 52-70650; Jun. 14, 1977, 52-78042[U]

Int. Cl.[2] B01D *1/24*

U.S. Cl. 159—47 R **9 Claims**



1. A process for producing powdery polycarbonate from a polycarbonate solution in a powdering apparatus which comprises: a casing having an enlongated hollow bore therein; an evaporating zone and a powdering zone extending axially in said bore; at least two rotatable intermeshing screws in said bore, said at least two screws extending from said evaporating zone to said powdering zone; a feed inlet in communication with said evaporating zone; a product outlet in communication with said powdering zone; said evaporating zone comprising an evaporation space in said bore above said at least two screws in said evaporating zone, said evaporating zone being provided with at least one degassing opening connecting said hollow bore to the outside of said casing; the side and bottom portions of said screws generally fitting with said casing in said evaporating zone; and the top, side and bottom portions of said screws generally fitting with said casing in said powdering zone; the process comprising:

(a) charging the polycarbonate solution into said feed inlet;

(b) rotating said screws so that the intermeshing threads thereof propel said solution toward said product outlet;

(c) heating said polycarbonate solution at least in said evaporating zone for evaporating the solvent of said polycarbonate solution, while rotating said screws, to dry said polycarbonate solution;

(d) cooling at least a portion of the evaporated solvent in said evaporation space to condense at least a portion of the evaporated solvent, and applying said condensed solvent on the inner side walls of said casing in close proximity to the area where the periphery of said screws begins to depart from the inner side wall of said casing in said evaporating zone, to prevent polycarbonate solid from adhering to or being deposited on said inner side walls in said evaporating zone, and if any solid polycarbonate is deposited on said inner side walls in said evaporating zone, to dissolve deposited solid polycarbonate;

(e) powdering the dried polycarbonate in said powdering zone; and

(f) discharging the powdered polycarbonate from said powdering zone via said product outlet.

4,184,912

PITCH CONTROL METHOD

James H. Payton, Chicago, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 861,394, Dec. 16, 1977, abandoned, which is a continuation of Ser. No. 713,302, Aug. 9, 1976, abandoned. This application Nov. 17, 1978, Ser. No. 961,583

Int. Cl.[2] D21C *9/08*

U.S. Cl. 162—72 **3 Claims**

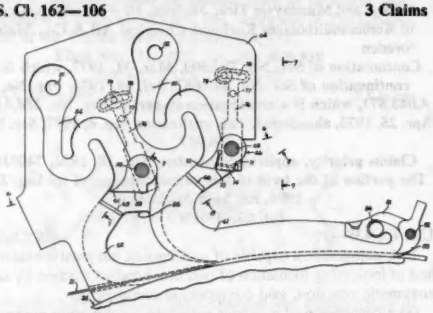
1. A method of inhibiting pitch formation in paper mill pulp systems which comprises adding to such systems, at a point prior to where pitch deposits normally occur, at least 0.5 ppm, based on the weight of the pulp, of a composition comprising:

Ingredients	% by weight
A. Non-ionic surfactant	50–20
B. Anionic Dispersant	45–15
C. Anionic Polymer having molecular weight less than 100,000	45–15

4,184,913
METHODS OF SIMULTANEOUSLY COVERING EACH OF A PLURALITY OF ELONGATED MATERIALS WITH UNIFORMLY WEIGHTED PULP INSULATION

Brian Lynch, Norcross, and James G. Wright, Jr., Roswell, both of Ga., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,344
Int. Cl.[2] E04C *1/62*
U.S. Cl. 162—106 **3 Claims**



1. A method of applying a pulpous mixture to each of a plurality of electrical conductors to form a uniformly weighted insulation on each of the conductors, which includes the steps of:

advancing a plurality of conductors through each zone of a dual zone headbox and in engagement with a forming cylinder;

flowing a pulpous material along each of two channels in said headbox each of said channels being associated with one of said zones; then

dividing the pulpous material flowing through each of the channels into a plurality of streams; and

forming each of the streams of pulpous material from one of the channels into a ribbon underlying one of the plurality of conductors as they are advanced through one zone of the headbox and forming each of the streams from the other channel into a ribbon overlying one of the plurality of conductors as they are advanced through the other zone of the headbox; while

adjusting the cross sectional area of flow in each channel to control the average velocity of flow of the pulpous material which is subsequently divided into said streams and further selectively adjusting the flow rate of said streams associated with at least one of said channels so that each increment of length of the ribbons underlying and overlying each conductor have a combined weight which is substantially constant.

4,184,914
FOAM COATING OF PAPER EMPLOYING A HYDROLYZED PROTEIN FOAMING AGENT

Byron Jenkins, 17 Hardwick Ave., Kidlington, Oxfordshire, England

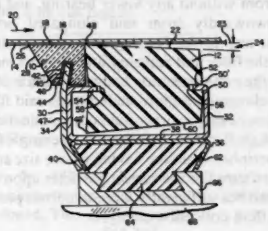
Filed May 24, 1977, Ser. No. 800,068
Int. Cl.[2] D21F *11/00*
U.S. Cl. 162—135 **6 Claims**

1. A method for reducing the curl of a sized paper sheet having a coating on one side and without substantially lowering the degree of sizing thereof, which comprises applying to the other side of the paper web during the manufacture of the coated and sized paper sheet on a paper making machine, a proteinaceous foam forming composition containing a hydrolyzed protein foaming agent capable of reducing the surface tension of water from a normal value of 72 dynes per centimeter to a minimum value in the range of from 45 to 65 dynes per centimeter.

4,184,915
DRAINAGE FOIL APPARATUS WITH INDIVIDUALLY REPLACEABLE CERAMIC SEGMENTS

Robert L. Metcalf, Beaverton, Oreg., assignor to Wilbanks International, Inc., Hillsboro, Oreg.

Filed Dec. 8, 1978, Ser. No. 967,864
Int. Cl.[2] D21F *1/48, 1/54*
U.S. Cl. 162—352 **19 Claims**



14. A drainage foil apparatus for removing liquid from paper pulp stock carried on a foraminous conveyor in a paper making machine, said foil apparatus comprising:

a foil including a nose portion of crystalline ceramic material having a leading edge and an upper surface which provides a smooth bearing surface that is engaged by the conveyor carrying said stock across said foil;

a foil rear portion having an upper surface which provides a foil surface that diverges rearwardly from the plane of said bearing surface and is spaced below said conveyor sufficiently to produce a vacuum between said foil surface and said conveyor;

said foil having an elongated slot provided in a lower surface portion of ceramic material and extending laterally across the conveyor;

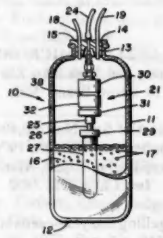
support means for supporting said nose portion and rear portion so that their upper surfaces are positioned respectively to contact the conveyor means and to produce said vacuum, said support means including a mounting member of metal which extends into said slot; and

bonding material in said slot for bonding said mounting member to said foil.

4,184,916
CONTINUOUS CELL CULTURE SYSTEM

William R. Tolbert, Manchester; Joseph Feder, University City, and Richard C. Kimes, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 850,987, Nov. 14, 1977. This application Jun. 26, 1978, Ser. No. 918,898
Int. Cl.[2] C12K *9/00*
U.S. Cl. 435—241 **1 Claim**



1. In the method of continuous cell culture comprising growing cells in an agitated liquid suspension of nutrient culture medium containing known amino acids, mineral salts,

vitamins and carbohydrates and periodically removing filtered liquid from the cells, the improvement comprising carrying out the agitation and filtering in apparatus comprising a hollow flask having an opening at the top, an elongated hollow shaft means and a stationary sleeve assembly positioned within said flask, said elongated hollow shaft means journaled for axial rotation in said stationary sleeve assembly, in fluid communication with said top opening of said flask and supported downwardly therefrom without any lower bearing, and a filter unit supported downwardly from said elongated hollow shaft means without any lower bearing and without any moving seals between the filter unit and any filter support means which could contact the cell suspension and adapted for coaxial rotation with said elongated hollow shaft means, said filter having a fluid collection cavity in direct fluid communication with the interior of said shaft means and the top opening of said flask, and a porous peripheral surface having a pore size smaller than the cells to be cultured or the carrier particles upon which said cells are attached but sufficiently large to permit permeation of fluid into said fluid collection cavity.

4,184,917

PROCESS FOR PRODUCING A STRUCTURALLY MODIFIED INTERFERON

Friedrich Dorner, Vienna; Marianne Scriba, Maria Enzerdorf, and Rudolf Weil, Vienna, all of Austria, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 547,782, Feb. 6, 1975, Pat. No. 4,061,538, which is a continuation-in-part of Ser. No. 456,702, Apr. 1, 1974, abandoned. This application Sep. 19, 1977, Ser. No. 834,126

Int. Cl.[2] **C12D** *13/06*

U.S. Cl. 435—68 **5 Claims**

1. A process for the production of a structurally modified interferon comprising enzymatically splitting off the terminal galactose unit in asialointerferons by incubating with β-galactosidase and recovering the modified interferon.

4,184,918

METHOD FOR PRODUCING 4-FORMYL-2-AMINO-BUTYRIC ACID (GLUTAMIC SEMIALDEHYDE)

Shigeru Nakamori, Yokohama; Kenzo Yokozeki, Kawasaki, and Koji Mitsugi, Yokohama, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Apr. 28, 1978, Ser. No. 901,088

Claims priority, application Japan, May 2, 1977, 52-50930

Int. Cl.[2] **C12D** *13/06*

U.S. Cl. 435—106 **6 Claims**

1. A method for producing 4-formyl-2-amino-butyric acid, which comprises: culturing a mutant capable of producing FABA and belonging to the genus Brevibacterium or Corynebacterium in a culture medium until a substantial amount of FABA has accumulated in the culture medium, and recovering the accumulated FABA from the culture medium.

4,184,919

METHOD OF GELLING MICROBIAL MYCELIA

Taisuke Iwasaki, Hino, and Toshihiko Kikuchi, Tokyo, both of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Continuation-in-part of Ser. No. 780,496, Mar. 23, 1977, abandoned. This application Mar. 29, 1978, Ser. No. 891,217

Claims priority, application Japan, Mar. 31, 1976, 51-35249

Int. Cl.[2] **C07G** *7/02*

U.S. Cl. 435—175 **9 Claims**

9. A method for gelling enzyme-containing microbial mycelia comprising:

forming a liquid suspension of the whole mycelia;

adding an organic solvent and a crosslinking agent to the suspension;

freezing the suspension; and

thawing the frozen suspension to thereby form a sponge-like gel of the mycelia.

4,184,920

ENZYMATIC SUBSTRATE COMPOSITION ADSORBED ON A CARRIER

Kjell G. Blixt; Sven I. A. Törnmarck, both of Malmö; Rolf Juhlin, Åkers Styckebruk; Karl R. Salenstedt, Upplands Väsby, and Mandayam Tiru, Järfälla, all of Sweden, assignors to Kommanditbolaget Kockums Chemical AB & Co., Malmo, Sweden

Continuation of Ser. No. 783,509, Mar. 31, 1977, which is a continuation of Ser. No. 489,667, Jul. 18, 1974, Pat. No. 4,043,871, which is a continuation-in-part of Ser. No. 354,412, Apr. 25, 1973, abandoned. This application Sep. 6, 1977, Ser. No. 830,957

Claims priority, application Sweden, Apr. 18, 1974, 7405199

The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.

Int. Cl.[2] **G01N** *31/14*

U.S. Cl. 435—19 **18 Claims**

1. A composition capable of undergoing enzymatic reaction and of indicating formation of reaction product formed by said enzymatic reaction, said composition comprising:

(a) a suspension of a carrier-substrate combination comprising:

(1) a solid granular carrier with a specific surface area of at least 50 m^2/g; and

(2) a substrate-containing layer in which said substrate is an enzymatic substrate capable of undergoing an enzymatic reaction, said layer derived by impregnation of the carrier with a non-aqueous substrate solution and removing the solvent, said layer being fixedly bound to said carrier by adsorption;

said substrate having a solubility of less than 0.1% by weight in water at 20° C. and being stable and free from hydrolysis and dissolution in the absence of its specific enzyme; said carrier being inert to said substrate;

(b) an enzyme for said enzymatic substrate; and

(c) an indicator for indicating said reaction product formed when said enzyme reacts with said enzymatic substrate.

4,184,921

PROCESS AND REAGENT FOR DETERMINING CHOLESTEROL

Peter Roeschlau, Seeshaupt; Erich Bernt, Münich, and Wolfgang Gruber, Tutzing-Unterzeismering, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Continuation of Ser. No. 695,332, Jun. 14, 1976, abandoned. This application Apr. 28, 1978, Ser. No. 900,958

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1976, 2612725

Int. Cl.[2] **G01N** *31/14*

U.S. Cl. 435—11 **7 Claims**

1. Process for the determination of total cholesterol, which process comprises saponifying any bound cholesterol in the sample by reacting same with cholesterol esterase and determining free cholesterol utilizing cholesterol oxidase in the presence of peroxidase, p-amino-phenazone, a surface-active agent and phenol, wherein at least one alkanol containing up to 4 carbon atoms is added to the test sample, in an amount to solubilize turbidity-causing complexes and then determining the formation of the resulting chromogen as a measure of the initial total cholesterol content.

6. Reagent for the determination of cholesterol comprising:

cholesterol oxidase,

peroxidase,

p-amino-phenazone

phenol,

buffer,

surface-active agent

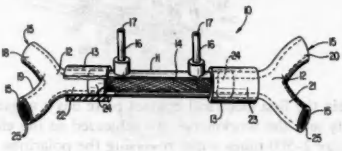
at least one alkanol containing up to 4 carbon atoms in an amount sufficient to solubilize turbidity causing complexed in a serum sample, and
cholesterol esterase.

4,184,922

DUAL CIRCUIT, WOVEN ARTIFICIAL CAPILLARY BUNDLE FOR CELL CULTURE

Richard A. Knazek; Pietro M. Gullino, both of Bethesda, Md., and David S. Frankel, Newark, Del., assignors to The Government of the United States, Washington, D.C.

Filed Nov. 11, 1977, Ser. No. 850,810
Int. Cl.[2] C12K *1/10, 9/00*
U.S. Cl. 435—284 **2 Claims**



1. A cell culture unit for the formation and maintenance of solid tissues and cells in vitro, comprising:
(a) shell means having spaced end portions and defining an elongated chamber therebetween;
(b) an endpiece attached to each end of said shell means, each endpiece terminating at its outer end in a plurality of tubular header members;
(c) capillary means within said chamber, said capillary means including a plurality of individual capillaries having walls which are permeable to nutrients required for cell growth or maintenance and/or cell products and being arranged with individual capillaries extending in a predetermined reproducible interwoven relationship with respect to each other, said capillaries dividing the chamber by the walls of the capillaries into an intracapillary space within the capillaries and an extracapillary space outside the capillaries, the intracapillary space and the extracapillary space communicating with each other only through the walls of the capillaries, a first portion of said capillaries extending through a first header at each end of the shell means and a second portion of said capillaries extending through a second header at each end of the shell means, each portion being woven with the other such that capillaries from the separate portions are in intimate contact in a regular pattern;
(d) means communicating with the intracapillary space of said first portion of said capillaries for passing perfusate therethrough;
(e) means communicating with the intracapillary space of said second portion of said capillaries for passing perfusate therethrough; and
(f) means communicating with said extracapillary space for seeding cells and/or retrieving cells or cell products therefrom.

4,184,923

REDUCTION OF GENTISIC ACID INTERFERENCE IN ANALYTICAL ELEMENTS

Richard M. Schubert, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 3, 1977, Ser. No. 848,255
Int. Cl.[2] G01N *31/14, 31/22*
U.S. Cl. 435—10 **20 Claims**

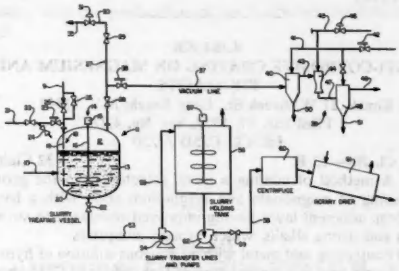
1. In an element for the analysis of a predetermined analyte in an aqueous liquid which may contain gentisic acid, said element comprising a carrier permeable to gentisic acid and permeable to said predetermined analyte, said carrier containing reagents comprising:
(a) an enzyme capable of catalyzing the oxidation of said predetermined analyte to a peroxide,
(b) a substance having peroxidative activity, and
(c) an indicator composition dispersed in an organic solvent and oxidizable by said peroxide in the presence of said substance having peroxidative activity to produce a detectable product;
the improvement wherein said organic solvent comprises a compound into which gentisic acid is not preferentially partitioned from the aqueous liquid.

4,184,924

APPARATUS FOR STEAM STRIPPING POLYVINYL CHLORIDE RESINS

Edwin D. Hornbaker; Adam Nugent, Jr., and Cecil P. Loechelt, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 649,428, Jan. 15, 1976, Pat. No. 4,086,414, which is a continuation-in-part of Ser. No. 498,546, Aug. 19, 1974, abandoned. This application Dec. 16, 1977, Ser. No. 861,309
Int. Cl.[2] B01D *3/38*; C08F *6/10*
U.S. Cl. 202—175 **1 Claim**



1. In an apparatus for treating particles of polyvinyl chloride resin prepared by a suspension process contained in an aqueous medium to reduce the vinyl chloride monomer content of the resin particles, the combination consisting of:
(a) a single treating vessel for batch treating the resin particles;
(b) agitation means in the treating vessel for maintaining the resin particles in suspension in the aqueous medium within the vessel for the entire time the particles are being treated;
(c) means for supplying steam to the vessel including,
(i) an insulated steam supply line extending through the top of the vessel to a point adjacent the bottom thereof,
(ii) a steam sparger line positioned below the agitation means and connected to the steam supply line and provided with a plurality of holes therein;
(d) means for supplying water to the steam supply line and the sparger line for flushing these lines prior to introduction of steam into these lines; and
(e) condenser means connected to the vapor space provided in the treating vessel above the level of the aqueous resin suspension.

4,184,925

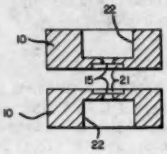
SOLID METAL ORIFICE PLATE FOR A JET DROP RECORDER

E. J. Doyle Kenworthy, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Dec. 19, 1977, Ser. No. 861,852
Int. Cl.[2] C25D *1/08, 1/02*
U.S. Cl. 204—11 **7 Claims**

1. A method of producing a solid orifice plate adapted for use in a jet drop recorder, comprising:

(a) forming a resist peg on a substrate to define an orifice recess,
(b) plating the substrate around the sides of the peg to form the orifice recess and over the peg to form an orifice smaller than the recess over the peg,
(c) forming a resist plug larger than the orifice over the



orifice to define a cavity on the side of the orifice opposite the recess,
(d) plating the substrate again around the sides of the plug to thicken the orifice plate and to form the cavity, and
(e) removing the resist and substrate to leave an orifice plate having an orifice disposed between the recess and the cavity.

4,184,926

ANTI-CORROSIVE COATING ON MAGNESIUM AND ITS ALLOYS

Otto Kozak, 27 W. Beech St., Long Beach, N.Y. 11561

Filed Jan. 17, 1979, Ser. No. 4,278
Int. Cl.[2] C25D *11/30*
U.S. Cl. 204—32 R **32 Claims**

1. A method of coating a metal selected from the group consisting of magnesium and magnesium alloy with a hard, uniform, adherent layer having improved resistance to strong acids and strong alkalis, which process comprises:
(a) contacting said metal with an aqueous solution of hydrofluoric acid at a temperature of from about 5° C. to about 30° C. to form a fluoromagnesium layer on said metal;
(b) washing said metal with water to rinse away the hydrofluoric acid;
(c) immersing the cleaned, coated metal from step (c) in a metallic container containing an electrolyte bath made from an aqueous solution of an alkali metal silicate; and
(d) applying an electrical potential of from about 150 volts to about 350 volts between said metal and said metallic container until a visible spark is discharged across the surface of said metal, said voltage being maintained until the desired coating thickness is formed on said metal.

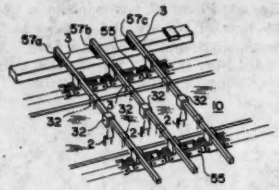
4,184,927

PROCESS AND APPARATUS FOR EFFECTING SURFACE TREATMENT OF WORKPIECES

Toshiro Takahashi, Shizuoka, and Masashi Ikegaya, Haibara, both of Japan, assignors to Riken Keikinzoku Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 29, 1977, Ser. No. 865,361
Claims priority, application Japan, Dec. 30, 1976, 51-159891; Mar. 23, 1977, 52-31096
Int. Cl.[2] C25D *11/16, 17/06*
U.S. Cl. 204—33 **6 Claims**

1. A process for effecting surface treatment of elongate aluminum workpieces suspended vertically in side-by-side relationship from carrier bars in an electrolytic bath comprising:
spacing a plurality of electric contact plates along at least one wall of the electrolytic bath and outside said bath, the plates differing alternately in polarity;
transferring successively the workpieces into the electrolytic bath:
degreasing the workpieces; and
advancing the carrier bars across the spaced electric contact plates for carrying the workpieces through the bath while applying electrical energy from the contact plates through the carrier bars to the successive workpieces as opposite electrodes of different polarities for anodizing the workpieces, the polarities of the individual workpiece electrodes being reversed as the carrier bars are advanced from plate to plate,



wherein the first electrical contact plate has a negative polarity and the workpieces are subjected to the electrical energy 2–500 times while reversing the polarities thereof each time, each workpiece continuously serving as a counter pole for each of the workpieces immediately preceding and succeeding, the total current flow being between the workpieces.

4,184,928

METHOD OF PREPARING A STEEL SURFACE FOR PAINTING OR ENAMELLING

Hugo Hoije, Kallered, Sweden, assignor to HH-Produkter, Magnusson & Co., Kallered, Sweden

Filed Aug. 30, 1978, Ser. No. 938,023
Claims priority, application Sweden, Sep. 15, 1977, 7710315
Int. Cl.[2] C25D *3/56, 3/60, 5/02, 5/06*
U.S. Cl. 204—43 Z **3 Claims**

2. An electrolyte for electrodepositing a metallic coating on a steel surface preparatory to painting or enamelling said surface, comprising of an aqueous solution containing zinc sulphamate, tin sulphate and sulphamic acid, the weight ratio of the contents of tin and zinc of the solution amounting to not less than 20:80 and not more than 60:40.

4,184,929

TRIVALENT CHROMIUM PLATING BATH COMPOSITION AND PROCESS

Thaddeus W. Tomaszewski, Dearborn, Mich.; Hans-Gerhard Creutz, deceased, late of Yale, Mich. (by Katharina A. Creutz, administratrix), and Richard J. Clauss, Allen Park, Mich., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Apr. 3, 1978, Ser. No. 892,603
Int. Cl.[2] C25D *3/06*
U.S. Cl. 204—51 **11 Claims**

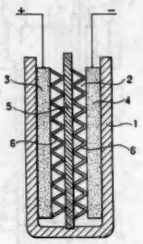
1. An aqueous acid trivalent chromium electroplating solution containing from about 0.2 to about 0.6 molar trivalent chromium, no more than about 6 parts per million hexavalent chromium, from about 0.2 to about 1.8 molar formate ions, and from about 1 to about 10 grams per liter of a bath soluble reducing agent selected from the group consisting of formaldehyde, glyoxal, formaldehyde bisulfite salts, glyoxal di-bisulfite salts, sodium formaldehyde sulfoxylate, and mixtures thereof, the molar ratio of formate to trivalent chromium in said solution being from about 1:1 up to about 3:1.

4,184,930

ELECTROLYZER FOR BASIC SOLUTIONS

Anthony-John Appleby, Sevres, and Gilles Crépy, Gif sur Yvette, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Aug. 17, 1977, Ser. No. 825,508
Claims priority, application France, Aug. 24, 1976, 76 25579
Int. Cl.[2] C25B 1/00, 1/02, 11/04
U.S. Cl. 204—96 9 Claims



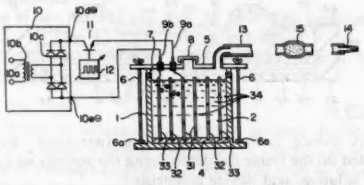
1. Electrolyser comprising two electrodes, an anode and a cathode, said cathode comprising a catalyser basically containing cobalt and molybdenum, at least partly immersed in a basic electrolyte, with a separator being interposed between said electrodes, wherein said anode comprises a porous conductive material comprising sintered nickel impregnated with nickel hydroxide in a quantity such that the proportion by weight between the nickel hydroxide and the nickel lies between 50 and 75%.

4,184,931

METHOD OF ELECTROLYTICALLY GENERATING HYDROGEN AND OXYGEN FOR USE IN A TORCH OR THE LIKE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohamashi, Japan

Filed Mar. 9, 1978, Ser. No. 884,804
Claims priority, application Japan, Mar. 10, 1977, 52-26319; Dec. 28, 1977, 52-157377
Int. Cl.[2] C25B 1/04
U.S. Cl. 204—129 4 Claims



1. A method of operating a torch, comprising the steps of:
electrolytically generating hydrogen and oxygen by passing an electric current in the form of pulses of a duration not greater than 50 microseconds between at least a pair of electrodes at least partly immersed in electrolytically conductive water and juxtaposed with one another in a tightly closed tank containing the water;
feeding the hydrogen and oxygen thus produced to a torch nozzle to form a mixture; and
igniting said mixture at said nozzle.

4,184,932

ELECTROPOLISHING PROCESS

Michael Ahlgrim, Erftstadt; Gerhard Mietens, and Helga Zygmann, both of Hürth-Efferen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,780
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743715
Int. Cl.[2] C25F 3/16, 3/24
U.S. Cl. 204—129.43 5 Claims

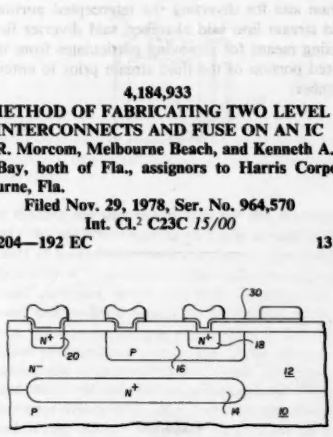
1. A process for electropolishing an article having an electrically conductive metallic surface, this surface being connected to a source of E.M.F. to form an anode, which comprises zonewise electropolishing an axially unsymmetrical article, by arranging, opposite the anode, a cathode of which the geometrical configuration and surface area correspond to the surface to be electropolished, the cathode being subdivided into a plurality of segments which are non-conductive with respect to one another, through which segments a current of the necessary density is alternately passed and discontinued, at intervals, so as to provide for a given segment a ratio of switch-on to switch-off period of 1:1 to 1:5 and the intervals are selected so as produce interruptions of at least 10 seconds and at most 5 minutes, with the production of the desired electropolishing effect.

4,184,933

METHOD OF FABRICATING TWO LEVEL INTERCONNECTS AND FUSE ON AN IC

William R. Morcom, Melbourne Beach, and Kenneth A. Berry, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Nov. 29, 1978, Ser. No. 964,570
Int. Cl.[2] C23C 15/00
U.S. Cl. 204—192 EC 13 Claims



1. A method of fabricating fuse elements and metallic contacts in an integrated circuit having an insulating layer on a substrate and contact apertures in said insulating layer comprising:
nonselectively applying a layer of fusible material;
nonselectively sputter etching said layer of fusible material to clean the surface of said layer of fusible material;
applying a layer of metallic material at a temperature below the hillock formation threshold of the metallic material;
selectively removing portions of said layer of metallic material to define a top layer of contacts and interconnects; and
selectively removing portions of said layer of fusible material to define fuse elements.

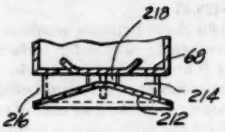
6. The method according to claim 1 wherein said layers of fusible and metallic materials are applied by sputtering.

4,184,934

PROTECTIVE SHIELD HAVING OMNI-DIRECTIONAL DIVERTER FOR SENSING MEANS

James D. Bode, Royal Oak, and Bernard R. Teitelbaum, Birmingham, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 13, 1978, Ser. No. 941,882
Int. Cl.[2] G01N 27/58
U.S. Cl. 204—195 S 24 Claims



1. A protective shield for protecting the sensing element of a sensor of the type which generates a signal indicative of the quantity of a particular constituent in a fluid stream, and wherein the sensor has a housing and where the sensing element protrudes therefrom, the protective shield comprising:

a shield surrounding the protruding sensing element and spaced therefrom to form a chamber about said sensing element, said shield having one end adapted to fit said housing and an opposite end, said shield further having fluid exit means proximate to said one end, for permitting fluid to flow out of said chamber;

omni-directional diverter means protrusible into said fluid stream attached to said protective shield means proximate said opposite end for intercepting a portion of the fluid stream and for diverting the intercepted portion of the fluid stream into said chamber, said diverter further including means for removing particulates from the intercepted portion of the fluid stream prior to entering said chamber.

4,184,935

REFERENCE ELECTRODE

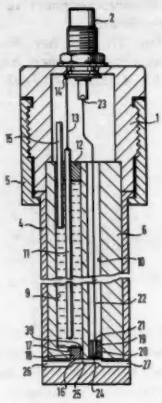
Johannes G. Schindler, and Werner Riemann, both of Marburg, Fed. Rep. of Germany, assignors to Dr. E. Fresenius Chemisch Pharmazeutische Industrie, Fed. Rep. of Germany

Division of Ser. No. 652,349, Jan. 26, 1976, Pat. No. 4,135,999. This application Jun. 6, 1977, Ser. No. 803,637
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1975, 2503176
Int. Cl.[2] G01N 27/30
U.S. Cl. 204—195 F 6 Claims

1. A reference electrode for use with an ion selective electrode comprising:

(a) an electrode body made of polytetrafluoroethylene, said body including a chamber for an electrolyte solution; and

(b) a stopper, said stopper being pressed into said electrode body and having a micro notch in the side wall thereof to provide a single aperture in the body as the sole electroytic communicating means between said chamber and the outside of said body, said aperture being of a size to restrict flow of electrolyte therethrough at normal pressure and room temperature to a rate of less than 5×10^{-6} micro liters per second.

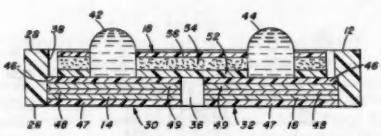


4,184,936

DEVICE FOR DETERMINING IONIC ACTIVITY

John O. Paul, East Rochester, and Kerinchan Babaoglu, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,085
Int. Cl.[2] G01N 27/46, 27/58
U.S. Cl. 204—195 R 9 Claims



1. A device having a frame and two solid electrodes mounted on the frame for determining the activity of ions in a liquid solution, said device comprising:

means, including a porous member extending between the electrodes, for providing ionic flow between the electrodes upon application of liquid solution at each electrode;

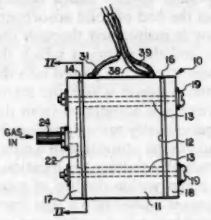
a nonporous layer partially covering said porous member and spaced from said electrodes whereby liquid solution can be applied to said porous member at the electrodes, said nonporous layer inhibiting the loss of liquid solution from said porous member; and

anti-shorting means for inhibiting the solution from contacting the edges of the electrodes.

4,184,937
ELECTROCHEMICAL CELL FOR THE DETECTION OF CHLORINE

Harshad Tataria, Miami, Fla.; Alan A. Schneider, Reisterstown, Md.; William A. Travers, Jr., Parkville, Md., and Lee E. Martin, Joppatowne, Md., assignors to Catalyst Research Corporation, Baltimore, Md.

Filed Dec. 26, 1978, Ser. No. 973,204
Int. Cl.[2] G01N 27/46
U.S. Cl. 204—195 R 13 Claims



1. An electrochemical cell for use in detecting chlorine gas comprising:

a. first and second spaced apart electrodes, each of said electrodes consisting of a gas permeable membrane having bonded thereto a catalyst portion consisting essentially of gold for said first electrode and gold or platinum black for said second electrode, said catalyst portions being positioned to face each other;

b. an electrolyte contained between said electrodes and in contact with the catalyst portion and membrane of each said electrodes, said electrolyte consisting of a solvent selected from the group consisting of propylene carbonate and γ-butyrolactone, and from 10^{-5} molar to saturation of an inorganic salt;

c. means for containing said electrolyte and said electrodes; and

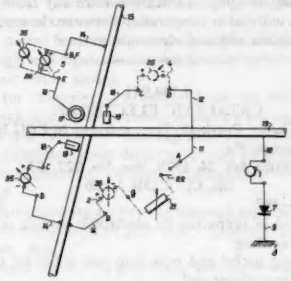
d. means for maintaining a fixed potential of the first electrode with respect to the second between +500 and −700 mv.

4,184,938
APPARATUS FOR REDUCING ELECTROLYTIC INTERFERENCE WITH METAL STRUCTURES

Josef Polak, Prague, Czechoslovakia, assignor to Chemoprojekt, projektova, inzenyrska a konzultacni organizace, Prague, Czechoslovakia

Division of Ser. No. 823,388, Aug. 10, 1977. This application Dec. 13, 1978, Ser. No. 969,190
Claims priority, application Czechoslovakia, Sep. 9, 1976, 6147/76
Int. Cl.[2] C23F 13/00
U.S. Cl. 204—196 2 Claims

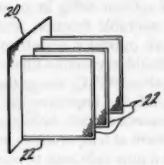
1. A circuit for substantially reducing adverse electrolytic effects on a metal structure embedded in electrolyte in the presence of a foreign current field associated with an interfering metal structure, comprising a test station with first through seventh terminals, means for connecting the interfering structure to the first and fourth terminals of said test station via galvanic connections, means for connecting the first mentioned metal structure to the second terminal via a galvanic connection, an auxiliary metal electrode, means for connecting said auxiliary electrode to the fifth terminal via a galvanic connection, a copper sulfate reference electrode, means for connecting said reference electrode to the third terminal via a galvanic connection, a milliammeter, means for connecting said milliammeter between fifth and sixth terminals, a variable resistor, a switch connected in series with said resistor between the first and seventh terminals, galvanic connections between the second and sixth terminals and between the second and seventh terminals of the test station, respectively.



4,184,939
DIAPHRAGMS FOR USE IN THE ELECTROLYSIS OF ALKALI METAL CHLORIDES

Igor V. Kadija, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Sep. 26, 1977, Ser. No. 836,636
Int. Cl.[2] C25B 13/04
U.S. Cl. 204—252 47 Claims



1. In an electrolytic diaphragm cell for the electrolysis of alkali metal chloride brines having an anode assembly containing a plurality of foraminous metal anodes, a cathode assembly having a plurality of foraminous metal cathodes, a diaphragm covering said cathodes, and a cell body housing said anode assembly and said cathode assembly, the improvement which comprises a porous diaphragm comprising a thermoplastic support fabric impregnated with a non-fibrilic active component containing silica, said porous diaphragm having a permeability to said alkali chloride brines of from about 100 to about 300 milliliters per minute per square meter of said diaphragm at a head level in said cell of from about 0.1 to about 20 inches of said alkali metal chloride brines.

4,184,940
ELECTROFORMING MANDREL

David J. Burkey, Millersville; Lawrence Clark, Lancaster; Jay R. George, Manheim, and Harry F. Long, Lancaster, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 890,456, Mar. 27, 1978. This application Jan. 11, 1979, Ser. No. 2,586
Int. Cl.[2] C25D 1/10
U.S. Cl. 204—281 3 Claims

1. An electrode for a patterned surface which is formed by electroplating said electrode, the improvement comprising:

(a) forming said electrode from a nonconductive copolymer of styrene and butyl acrylate, polymerized in situ in a support phase of silicone liquid polymer;

(b) coating said electrode with a metallic coating subsequent

to the utilization of the electrode in an electroplating bath with a conductive metal coating of about 0.004 mils; and

(c) subsequently coating said electrode with a second metallic coating ranging in thickness normally from 5 mils to 250 mils without any separation between the metal surface being formed and said electrode surface.

4,184,941

CATALYTIC ELECTRODE

William W. Carlin, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 24, 1978, Ser. No. 927,193
Int. Cl.[2] C25B *11/06*
U.S. Cl. 204—292 **60 Claims**

1. A method of preparing an electrodic surface on a metal substrate comprising:

(a) depositing nickel and iron onto said substrate to form a nickel-iron surface; and

(b) leaching iron out of said surface to form a porous surface.

4,184,942

NEOMESOPHASE FORMATION

Derek J. Angier, Peapack, and Harry W. Barnum, Brookside, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 5, 1978, Ser. No. 903,171
Int. Cl.[2] C10C *3/02, 3/08;* D01F *9/14*
U.S. Cl. 208—44 **9 Claims**

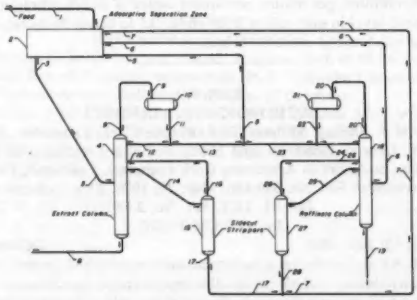
1. In a process of preparing an optically anisotropic deformable pitch by treating a carbonaceous isotropic pitch with an organic solvent system having a solubility parameter between 8.0 and 9.5, said solvent being in an amount sufficient to provide a solvent insoluble fraction which is capable of being converted into an optically anisotropic pitch having greater than 75% of a liquid crystalline phase in less than 10 minutes when heated at about 30° C. above the point where the material becomes liquid, the improvement comprising heating the isotropic carbonaceous pitch before treatment with said organic solvent system at temperatures in the range of about 350° C. to 450° C. for a time sufficient to increase the solvent insoluble fraction of the pitch and thereafter terminating said heating.

4,184,943

FRACTIONATION IN AN ADSORPTIVE HYDROCARBON SEPARATION PROCESS

Mark C. Anderson, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 21, 1978, Ser. No. 972,113
Int. Cl.[2] C07C *7/13;* C10G *25/00*
U.S. Cl. 208—310 R **6 Claims**



1. In a process for the separation of chemical compounds wherein:

(a) a feed stream is passed into a fixed bed of a solid adsorbent which preferentially adsorbs one component species contained in the feed stream;

(b) a multi-component desorbent stream is passed into the fixed bed of solid adsorbent at a different point than the feed stream is passed into the fixed bed of solid adsorbent;

(c) a multi-component flush stream is passed into the fixed bed of solid adsorbent at a different point than the feed stream or the desorbent stream are passed into the fixed bed of solid adsorbent;

(d) an extract stream which is rich in the preferentially adsorbed component species and a raffinate stream are withdrawn from the bed of solid adsorbent;

(e) a net fluid flow is maintained through the fixed bed of solid adsorbent, and the points at which the feed stream and the desorbent stream are passed into the bed of solid adsorbent and the points at which the extract stream and the raffinate stream are withdrawn from the bed of solid adsorbent are periodically moved in a unidirectional pattern which simulates the utilization of a moving bed of the adsorbent by gradually shifting the location of adsorption and desorption zones within the bed of solid adsorbent;

(f) the extract stream is passed into a first fractionation column and separated into a first multi-component overhead fraction, a first multi-component sidecut fraction and a first bottoms fraction;

(g) the raffinate stream is passed into a second fractionation column and separated into a second multi-component overhead fraction, a second multi-component sidecut fraction and a second bottoms fraction; the improvement which comprises:

(i) passing the first sidecut fraction into a third fractionation column and therein separating the first sidecut fraction into a third bottoms fraction and a first overhead vapor stream which is passed into an intermediate point of the first fractionation column;

(ii) passing the second sidecut fraction into a fourth fractionation column and therein separating the second sidecut fraction into a fourth bottoms fraction and a second overhead vapor stream which is passed into an intermediate point of the second fractionation column; and,

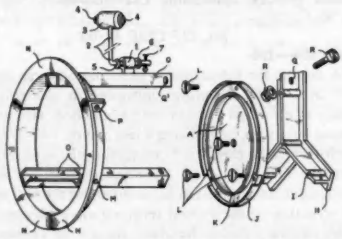
(iii) passing in admixture at least a portion of each of the third and the fourth bottoms fractions into the bed of solid adsorbent as the previously specified flush stream of step (c).

4,184,944

ROTARY SCREEN APPLIANCE

Jean Tytko, 15, rue de Bourgogne, Tremblay-les-Gonesses, France (93410)

Filed Apr. 26, 1977, Ser. No. 791,142
Claims priority, application France, Apr. 27, 1976, 76 12477
Int. Cl.[2] B07B *1/24, 1/54*
U.S. Cl. 209—288 **8 Claims**



1. A rotary screen appliance having no motor and being fittable directly to a motorized driving device of the cement mixer type having an open mouth at one end, comprising:

a screen cage equipped with grids of suitable mesh and

composed of a plurality of sections each having longitudinal flanges projecting out of the cage at which flanges the sections are assembled;

a head connected to one end of said screen cage and covering said end;

a frame, having at least two guide arms, connected to the side of said head opposite to the side covering the end of said screen cage;

fastening means, slidably connected to said guide arms, for entering the mouth of the driving device and coupling to the inside wall of the mouth such as to be supported thereby; and

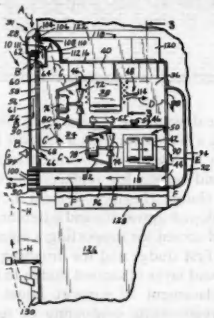
shaking means connected to said screen cage for shaking the screen cage as it rotates.

4,184,945

MICROWAVE WALL OVEN AIR FLOW SYSTEM

Thomas J. Morgan, Maple Lake; Anil Marfatia, Minneapolis, and William G. Kullman, Wayzata, all of Minn., assignors to Litton Systems, Inc., Minneapolis, Minn.

Filed Jun. 12, 1978, Ser. No. 914,485
Int. Cl.[2] H05B *9/06*
U.S. Cl. 219—10.55 D **15 Claims**



1. An air flow system for a wall-mount microwave oven comprising:

a housing having an interior divided into a cooking cavity and an electronic component compartment;

means for dividing said interior into said cooking cavity and said electronic component compartment;

said housing having a front face comprised of a movable door and a control panel, a back face, a top face, a bottom face, and a pair of side faces;

said cooking cavity being bounded by walls, one of said walls being an interior surface of said door;

said electronic component compartment having electronic control components including a transformer and a magnetron mounted therein;

a circuit board for holding at least some of said electronic components, said circuit board being mounted within said electronic component compartment;

means for mounting said circuit board in said electronic component compartment in a spaced relationship from said control panel;

an air passageway being defined in an area between said control panel and said circuit board;

means for supporting said magnetron within said electronic control compartment in a spaced relationship from said transformer;

wave guide means communicating between the magnetron in said electronic component compartment and said cooking cavity for supplying electromagnetic wave energy produced by said magnetron to said cooking cavity;

air inlet means disposed adjacent an upper end of said control panel for admitting air into said electronic component compartment;

air outlet means disposed adjacent a lower end of said control panel for allowing air to exit from said electronic component compartment;

blower means for moving air in through said air inlet means, through said electronic component compartment, and out said air outlet means;

means for diverting a portion of the air being drawn in through said air inlet means to said air passageway so that a portion of the air entering said electronic component compartment passes directly to said air passageway and by the electronic components mounted on the circuit board;

means for directing air passing through said electronic component compartment past said magnetron and said transformer; and

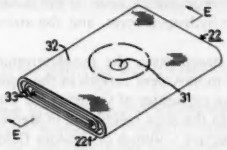
duct means for carrying air from said electronic component compartment to said air outlet means.

4,184,946

SEWAGE TREATMENT WITH NESTED SHORT TUBE CONTACT MEDIA

Masashi Kato, No. 5-2, 1-chome, Houjo, Daito-shi Osaka-fu, Japan

Filed Jun. 9, 1977, Ser. No. 805,225
Claims priority, application Japan, Jun. 11, 1976, 51/69509
Int. Cl.[2] C02C *1/06*
U.S. Cl. 210—14 **4 Claims**



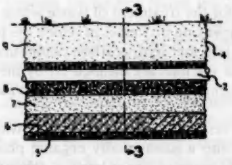
1. A process for treating sewage in a sewage tank comprising filling a sewage tank with filter media consisting of a nest of a plurality of short net tubes one in the other and that have been pressed flat and welded together at least at one point to keep them flat, said tubes being composed of a synthetic resin material and having a specific gravity of less than 1 and agitating said filter media and sewage in the sewage tank by an agitating means.

4,184,947

TREATMENT OF SEWAGE EFFLUENT

Ronald R. Demisch, 4 Tarlton Rd., Toronto, Ontario, Canada

Filed Aug. 1, 1977, Ser. No. 820,888
Int. Cl.[2] C02C *1/02*
U.S. Cl. 210—18 **5 Claims**



1. A method of treating sewage effluent containing phosphate in a leaching bed having a distribution system comprising the following steps:

(a) admixing red mud as derived from processing bauxite

with soil having a permeability coefficient (K) of not less than 10^{-5} cm/sec;

(b) applying a layer of such mixture in the leaching bed below the distribution system and,

(c) percolating the sewage effluent in the presence of entrained air through such layer of red mud and soil mixture to remove phosphate from the effluent and retain the phosphate.

4,184,948

WATER SOFTENING METHOD USING THERMALLY REGENERABLE ION EXCHANGE RESIN

Sabah S. Dabby, Morrisville, Pa., and Emmanuel J. Zaganiaris, Juan-les-Pins, France, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed May 31, 1977, Ser. No. 802,142
Int. Cl.[2] C02B *1/40*
U.S. Cl. 210—25 **10 Claims**

1. Method of treating an aqueous fluid to substantially reduce the concentration of dissolved salts contained therein, said salts being present in the fluid at a concentration less than about 20 millimoles per liter and containing both divalent and monovalent cations in a mole ratio between about 3:1 and 1:3 of divalent to monovalent cations, which method comprises passing the fluid into and through a bed of a single, thermally regenerable ion exchange resin having a great affinity for divalent than for monovalent cations, the bed having two distinct zones, the useful cation exchange capacity of the freshly regenerated resin in the first zone being essentially in the monovalent ion form and the useful cation exchange capacity of the freshly regenerated resin in the second zone being essentially in the hydrogen form, and the sizes of the zones being

(a) calculated based upon the pre-determined content of divalent and monovalent cations in the aqueous fluid and the respective capacities of the resin for these cations,

(b) controlled to the sizes calculated in step (a) by controlling the respective volumes of aqueous fluid and regenerant passing through the column during a cycle of aqueous fluid treatment and countercurrent regeneration, and

(c) such that the useful cation exchange capacity of the resin in the first zone becomes substantially exhausted by the exchange of monovalent cations from the resin with divalent cations from the fluid at approximately the same time that the useful cation exchange capacity of the resin in the second zone becomes substantially exhausted by the exchange of hydrogen ions from the resins with monovalent cations.

4,184,949

PROCESS FOR SEPARATING HYDROCARBON POLLUTION FROM A HYDROORGANIC MEDIUM

Gabriel Sader, 23 Rue du chemin Vert, Paris, France (75011)

Filed Nov. 30, 1977, Ser. No. 856,171
Claims priority, application France, Mar. 12, 1976, 76 36440
Int. Cl.[2] C02B *1/20*
U.S. Cl. 210—43 **7 Claims**

1. A process for the treatment of waste water containing the residues from dewaxing processes in which the protective films of monomer of polymer hydrocarbon compounds on vehicles, machine tools or the like, are cleaned off by means of pressurized water to form said residue-containing waste water, comprising:

allowing the residues to settle from said waste water until separation into a substantially organic phase layer and a substantially aqueous phase layer is achieved;

removing said substantially organic phase layer from said substantially aqueous phase layer;

treating the substantially organic phase layer, under agitation, with 0.05 to 10 parts by weight, per 100 parts of said layer, of quaternary ammonium salt, to obtain a reusable hydrocarbon fraction and a discardable organic waste fraction;

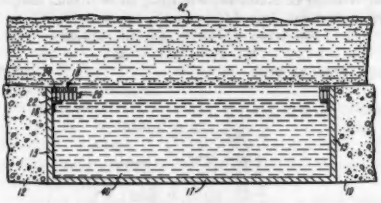
treating the substantially aqueous phase layer, under agitation, with 1 to 20 parts by weight, per 100 parts of said aqueous layer, of a mixture of 10 to 90 parts of polyholoside and 90 to 10 parts of alum, to obtain a reusable hydrocarbon fraction and a substantially clean water fraction.

4,184,950

METHOD AND APPARATUS FOR DEWATERING SLUDGE

Leon C. Bixby, Owensboro, Ky., assignor to Hendrick Manufacturing Company, Carbondale, Pa.

Continuation of Ser. No. 770,367, Feb. 22, 1977, abandoned, and a continuation of Ser. No. 598,571, Jul. 24, 1975, abandoned.
This application Feb. 21, 1978, Ser. No. 879,047
Int. Cl.[2] B01D *37/04*
U.S. Cl. 210—73 R **2 Claims**



1. In a sludge dewatering apparatus of the type wherein first sludge forming a layer overlying a support liquid immersing a support screen is dewatered by withdrawing support liquid from below said screen for replacement by liquid draining from said first sludge, the improvement including at least one drainage slab sloped upwardly and extending outwardly from one side of said screen for supporting a layer of second sludge alongside said first sludge and for directing liquid draining to said slab from said layer of second sludge to said support liquid for futher replacement of support liquid withdrawn from below said screen, while continuing to support the second sludge from which such liquid drains.

2. The method of dewatering sludge which comprises filing a trough with support water to immerse a screen disposed across an opening to said trough, depositing sludge onto said support water and onto a drainage slab inclined upwardly from a side of said trough, allowing water to drain to said trough from the sludge residing on said support water and on said drainage slab, and discharging water from said trough at an initial rate not exceeding the rate at which water drains from said sludge to said trough.

4,184,951

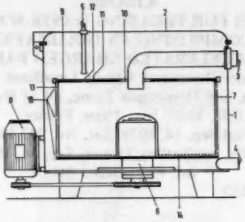
METHOD AND APPARATUS FOR CLEANING LIQUIDS

Gerardus T. A. M. Wientjens, Kleefseweg 34, Ottersum, Netherlands

Filed Jul. 3, 1978, Ser. No. 921,655
Claims priority, application Netherlands, Jul. 7, 1977, 7707572
Int. Cl.[2] B01D *33/02, 33/36*
U.S. Cl. 210—78 **2 Claims**

1. An apparatus for removing solids from liquids comprising a centrifuge having a housing, a cover for said housing, a drum within said housing and means for rotating said drum, a strainer within said drum and having a closed casing, the strainer having a bottom comprising a screen and a top having screen openings, liquid centrifuged off leaving said drum through said screen openings, a liquid inlet extending into a central opening in the cover, a supply nozzle outside the top of the strainer and in alignment with the screen openings, and means for supplying liquid under pressure to said supply nozzle so as to wash away any solids clogging the screen openings.

2. A process for cleaning liquids employing an apparatus according to claim 1, comprising supplying liquid to said drum, rotating the drum and withdrawing cleaned liquid, and during



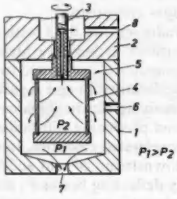
operation discharging liquid under pressure through said nozzle so as to wash away any solids which might clog the screen openings.

4,184,952

MEASUREMENT OF BSW IN CRUDE OIL STREAMS

Thomas L. Stewart, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 12, 1978, Ser. No. 905,261
Int. Cl.[2] B01D *37/00;* **G01N** *15/04*
U.S. Cl. 210—78 **8 Claims**



1. A process for measuring the water and sediment content of flowing crude oil having a varying intrinsic dielectric constant comprising, continuously removing a sample stream of the crude oil, feeding the sample stream into an outer chamber containing an inner chamber having a wall formed of a filter, rotating the inner chamber while pressuring the sample from the outer chamber into the inner chamber, filtering sediment from the sample passing into the inner chamber and allowing centrifugal force in the inner chamber to force water in the sample back into the outer chamber, withdrawing clean dry sample from the inner chamber, and continuously measuring the difference between the dielectric constants of the sample and the clean dry sample to facilitate determining the true water and sediment content of the crude oil.

4,184,953

PHYSICAL PROCESS

David J. S. Allinson, East End, near Newbury, England, and Robert W. Mitchell, Inverurie, Scotland, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 21, 1978, Ser. No. 888,531
Claims priority, application United Kingdom, Mar. 22, 1977, 11957/77; May 5, 1977, 18855/77
Int. Cl.[2] B01D *29/08*
U.S. Cl. 210—82 **7 Claims**

1. A filter element suitable for filtering sea water for injection into an oil reservoir, the filter element consisting substantially of polyester fibers in the form of a fabric, the diameter of the fibers being in the range 8 to 15 microns, the thickness of the element being from 7 to 20 mm. and wherein the density of the element is in the range 0.080 to 0.100 gm/cc.

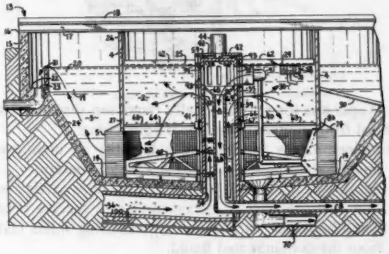
4. A method of filtering sea water which method comprises passing the sea water containing up to 1.0 mg/liter of particles of size 1 to 80 microns through a filter element as claimed in claim 1 to remove at least 50% of particles in the 1–2 microns range and at least 60% of particles above 2 microns in size.

4,184,954

SEDIMENTATION DEVICE AND METHOD FOR PURIFYING WASTE WATER

Albert C. Peterson, 103 E. 113th Ter., Kansas City, Mo. 64114

Filed Mar. 23, 1979, Ser. No. 23,177
Int. Cl.[2] B01D *21/14, 23/02*
U.S. Cl. 210—83 **12 Claims**



1. A method for clarifying waste water comprising the steps of:

(a) providing first and second sedimentation basins with a substantially horizontally oriented tube settler having a plurality of individual tubes connected between and communicating said basins;

(b) flowing the waste water from said first basin slowly through said tube settler to settle particulate matter suspended in the waste water onto a lower surface of said tubes, and direct the clarified waste water into said second basin; and

(c) selectively and cyclically backflushing the waste water in the tubes, whereby the particulate matter settled on the tube lower surfaces is drawn, along with the backflush water, from the tubes and into a sludge disposal duct for continuous clarification of the waste water.

3. In a sedimentation device for purifying waste water having first and second basins separated by a baffle, the improvement comprising:

(a) a tube settler connected with said baffle and mounted substantially horizontally therein, and having a plurality of individual tubes communicating liquid between said first and second basins;

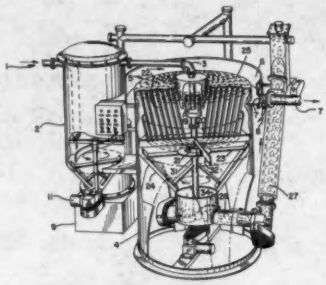
(b) means flowing unclarified liquid into the first basin and slowly through the tube settler, whereby particles suspended in the unclarified liquid settle onto an inner surface of the tubes, and the resultant clarified liquid flows into the second basin; and

(c) a tube cleaner mounted on the sedimentation device with means for intermittent registry with an upstream end of said tubes, and including means creating a suction backwash therein which reverses the direction of fluid flow through said tubes during registry with said tube cleaner, with sufficient velocity to dislodge and draw the settled particles from the inner surface of the tubes and flush the same into a sludge disposal duct.

4,184,955
METHOD AND APPARATUS FOR CLARIFYING LIQUIDS THROUGH SETTLING

Kostas S. Arvanitakis, 14945 S. Dogwood Ave., Orland Park, Ill. 60462

Continuation-in-part of Ser. No. 618,137, Sep. 30, 1975, abandoned. This application Oct. 3, 1977, Ser. No. 838,753
Int. Cl.[2] B01D *21/06*
U.S. Cl. 210—83 20 Claims



1. Apparatus for gravitationally removing suspended solids material from contaminated liquid comprising

container means for holding a quantity of contaminated liquid having solids material suspended therein,

a plurality of concentric frusto-conic sections carried within said container means and positioned to receive contaminated liquid for settling and accumulating solids material from the contaminated liquid,

inlet means having a discharge outlet for introducing contaminated liquid having solids material suspended therein into said container means,

said discharge outlet extending within said container means to a position beneath the level of liquid contained therein to introduce contaminated liquid into said container means at a point beneath the level of liquid discharged from said container means,

turbulence suppressing means positioned in operative contact with said inlet means for quiescing the discharge of contaminated liquid into said container means,

means for creating a back pressure on liquid passing from said inlet means to said concentric frusto-conic sections for facilitating settling of solids material thereon, and

means for removing the solids material settled and accumulated on said concentric frusto-conic sections from said container means and discharging the liquid clarified thereby.

18. A method of separating suspended solids material from a contaminated liquid comprising the steps of

introducing contaminated liquid having solids material suspended therein into a container having a plurality of concentric frusto-conic sections supported therein,

discharging the contaminated liquid being introduced into the container at a point beneath the level of liquid contained therein and beneath a discharge level of uncontaminated liquid passed from the container,

imposing a predetermined back pressure on the contaminated fluid contained in the container to facilitate settling of the solids material suspended therein,

suppressing turbulence within the container caused by introducing the contaminated liquid thereinto,

gravitationally settling solids material suspended in the contaminated liquid onto the surfaces of the frusto-conic sections and passing uncontaminated liquid from the container,

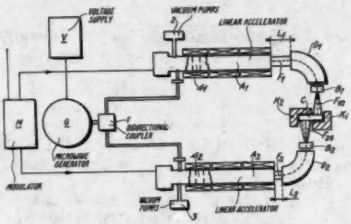
agglomerating the suspended solids material settled on the frusto-conic section surfaces, and

removing the agglomerated solids material from said container.

4,184,956
APPARATUS FOR TREATING WASTE-WATERS AND SLUDGES, COMPRISING AN IRRADIATION SYSTEM USING ACCELERATED CHARGED PARTICLES

Guy Azam; André Bensussan; Claude Levaillant; Harry Huber; Emile Mevel, and Dominique Tronc, all of Buc, France, assignors to C.G.R. MeV, Inc., Paris, France

Filed Sep. 14, 1978, Ser. No. 942,197
Claims priority, application France, Sep. 16, 1977, 77 28072
Int. Cl.[2] C02B *3/00*
U.S. Cl. 210—103 8 Claims



1. An apparatus for treating a fluid consisting of waste-waters and sludges comprising:

means for irradiating the fluid with a beam of accelerated charged particles including a high-voltage source, a microwave generator G connected to said source, two linear electron accelerators A_1 and A_2 arranged parallel to each other for receiving identical microwave signals from said generator and producing substantially identical beams F_1 and F_2 of accelerated electrons, two deflectors D_1 and D_2 arranged downstream of said accelerators A_1 and A_2 for respectively deflecting beams F_1 and F_2 through angles of $\pm\theta$, two magnetic scanning systems B_1 and B_2 arranged downstream of the deflectors D_1 and D_2 for receiving the deflected beams and producing scanning beams F_{10} and F_{20};

means for obtaining a constant flow of the fluid to be treated;

means for controlling said flow;

an irradiation duct C of rectangular cross-section through which said fluid is conducted with two windows in the path of said scanning beams F_{10} and F_{20}, and transparent to said scanning beams, said duct conducting a sheet of fluid on two opposite sides of said duct, which sheets are irradiated by said beams F_{10} and F_{20};

means for measuring and controlling the irradiation dose received by said fluid in said duct; and

means connected to said measuring and controlling means for stopping the flow of fluid and recycling any fluid which has not been suitably treated.

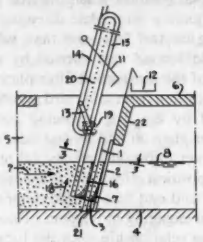
4,184,957
SCREENING APPARATUS FOR REMOVING COARSE MATERIAL FROM FLUIDS INCLUDING A SCREEN CLEANER

Bertram Botsch, Albtalstr. 13, D-7-500 Karlsruhe, Fed. Rep. of Germany

Filed Oct. 20, 1977, Ser. No. 843,826
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647539
Int. Cl.[2] C02C *1/22;* B01D *35/28*
U.S. Cl. 210—155 14 Claims

1. A screening apparatus for use in removing coarse materials from a fluid flowing in a channel, comprising screen means including a first screen and a second screen, said first and second screens being disposed one behind the other with re-

spect to the direction of the flow of the fluid, mounting and cleaning means for cleaning said screen means by removing screenings therefrom, and for mounting said screen cleaning



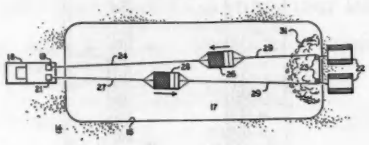
means with respect to said first and second screens, said screen cleaning means intermeshing with said first and second screens for removing simultaneously the screenings from both screens.

4,184,958

APPARATUS FOR TREATING SUMPS

Frank Manchak, Jr., 635 Grove Ln., Santa Barbara, Calif. 93105

Division of Ser. No. 406,349, Oct. 15, 1973, Pat. No. 4,028,240.
This application Jun. 6, 1977, Ser. No. 803,794
Int. Cl.[2] B01F *3/14;* E02F *3/60*
U.S. Cl. 210—170 **3 Claims**



1. In combination with a sump of pasty material that has first and second oppositely disposed sides, a pile of powdered solid material at least partially in said sump adjacent said first side thereof, an apparatus for use in mixing said powdered solid material with said pasty material, said apparatus including:

a. first and second scoops, each of said scoops including a pair of side walls, forward and rearward end walls connected to said pair of side walls, a top supported from said pair of side wall and forward and rearward end walls, a transverse blade that extends downwardly and forwardly from said rearward end wall, and a plurality of apertures defined in said forward end wall, pair of side walls and said top;

b. first and second laterally spaced pulleys that are anchored at fixed positions adjacent said first side of said sump;

c. first and second laterally spaced, power-operated winches located at fixed positions adjacent said second side of said sump, said first and second winches capable of being operated concurrently to rotate in opposite directions;

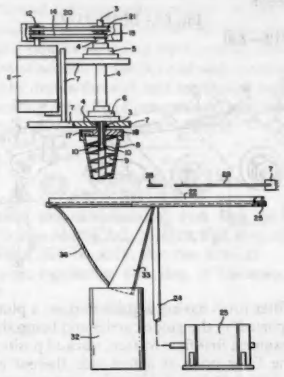
d. a drag line that engages said first and second winches and extends across said sump to movably engage said first and second pulleys, said drag line including first and second reaches that have said first and second buckets interposed therein, with said winches when operated to rotate in opposite directions permitting one of said scoops to be moved upwardly on said pile and then moved towards said second side, with said scoop as it moves on said pile towards said second side having said blade thereof dig into said pile and direct solid material into said scoop, and said blade as said scoop moves towards said second side through said pasty material forcing said pasty material into said scoop whereupon it mixes with said powdered material in said scoop and the resulting mixture of said pasty material and powdered material being extruded outwardly from said scoop through said apertures, and as one of said first or second scoops moves towards said second side the other of said scoops moving towards said first side and said pile where it may be loaded with said powdered material to be subsequently mixed with said pasty material when it is moved towards said second side.

4,184,959

SLUDGE RECOVERY APPARATUS

Anthony R. Marmo, Cheswick, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 16, 1978, Ser. No. 878,551
Int. Cl.[2] B01D *17/00*
U.S. Cl. 210—179 **2 Claims**



1. Sludge recovery apparatus comprising:

a frame supporting a motor arranged to drive a pair of vertically disposed concentric hollow shafts at different speeds;

a centrifuge connected to the bottom of said shafts;

said centrifuge comprising a support through which said shafts project, the outer of said shafts terminating in a plate, and a downwardly converging hollow conical separator member having an open discharge end attached to the bottom of said plate;

means supporting the inner of said hollow shafts in said plate and thus positioning it centrally in the conical separator member;

at least one radially directed orifice in said inner shaft through which sludge-containing liquid influent flows into the conical separator member;

scraper means in said conical member having a surface engagable with the inner surface of the conical member for dislodging sludge solids therefrom and displacing same through the open discharge end;

an opening in said plate spaced inwardly from the inner wall of the separator member for receiving liquid effluent separated from the sludge and discharging it from the separator member;

a rotatable drying table beneath said separator member arranged to receive said sludge solids from the member;

means for rotating the table under the separator member; a hinged drop door in said table top, and means for automatically effecting dropping and raising of said hinged drop door sequentially while turning with said table through said station, and heating means above the table for drying the solids prior to discharging the same by gravity into a container;

whereby as sludge-containing liquid influent is admitted to the conical separator member through said orifice and the separator member rotated to separate liquids from solids, liquid effluent from the separator member is discharged

through the plate opening, while the scraper means is rotated to remove sludge solids from the separator member inner surface and discharge the solids onto said table to be dried prior to further discharging the dried solids into a container.

4,184,960

FILTER PRESS WITH TRANSPORTING AND LOCKING DEVICE

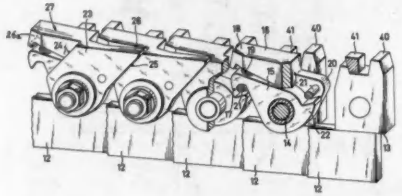
Alfons Schotten, Duren, Fed. Rep. of Germany, assignor to Eberhard Hoesch & Sohne GmbH & Co., Duren, Fed. Rep. of Germany

Filed Apr. 7, 1978, Ser. No. 894,508

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2716065

Int. Cl.[2] B01D *25/12*

U.S. Cl. 210—230 **9 Claims**



1. In a filter press having a guide carrier; a plurality of filter plates supported by the guide carrier and being shiftable therealong to assume a first face-to-face, stacked position in a closed state of the filter press at a first side thereof and a second face-to-face stacked position in an open state of the filter press at a second side thereof; a releasable locking means mounted on each filter plate for releasably locking adjoining filter plates to one another in the first and second stacked positions; and moving means including a gripper driven in the direction of the filter plate displacement from the first side to the second side and sequentially cooperating with each releasable locking means for unlatching the filter plates from one another and effecting displacement thereof from the first side towards the second side; the improvement in said locking means in each filter plate, comprising:

(a) a pivotally mounted locking hook having a hooked end;

(b) a detent lever swingably supported by a pivot and having an end face arranged for cooperating with said gripper; said detent lever having first, second and third pivotal positions; in said first pivotal position said end face is clear of the traveling path of said gripper; in said second pivotal position said end face is in the traveling path of said gripper for being engaged thereby to pivot said detent lever into said third pivotal position; and in said third position said detent lever maintains said locking hook in a disengaged state;

(c) a detent pin affixed to said detent lever at a location spaced from said pivot of said detent lever, said detent pin cooperating with the hooked end of the locking hook of the adjoining filter plate oriented towards said second side;

(d) coupling means connecting, in the same locking means, the detent lever to the locking hook for pivoting the locking hook by the detent lever into disengagement from the associated detent pin upon motion of said detent lever from said second pivotal position to said third pivotal position by the force exerted by said gripper on said end face of said detent lever;

(d) spring means urging said detent lever into said second pivotal position; and

(f) first and second camming control faces on said detent lever cooperating with the respective second and first camming control faces on the detent levers of adjoining filter plates; wherein the positional relationship between the camming control faces, the detent pin, the end face of said detent lever and the locking hook is such that said detent lever moves into said second pivotal position from said first pivotal position when the first camming control face of an adjoining filter plate disengages from said second camming control face, and that, when a filter plate arrives in said second side carried by said gripper, the detent lever of the last-named filter plate moves into said first pivotal position from said third pivotal position by the force exerted by the first camming control face of an adjoining filter plate on said second side; the movement of said detent lever into said first pivotal position from said third pivotal position effects simultaneously a disengaging movement of said end face of said detent lever from said gripper and an engaging movement of said detent pin into an interlocking relationship with the locking hook of the adjoining filter plate on said second side.

4,184,961

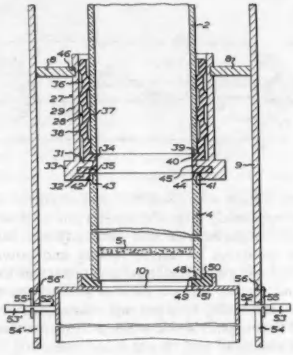
EXTRACTION APPARATUS, PREFERABLY FOR ANALYZING PURPOSES

Leif G. R. Rynde, Skyttorp, and Carl P. Nordbeck, Karlskrona, both of Sweden, assignors to Tecator Instrument AB, Hoganas, Sweden

Filed Feb. 15, 1978, Ser. No. 877,959

Int. Cl.[2] B01D *29/20*

U.S. Cl. 210—232 **5 Claims**

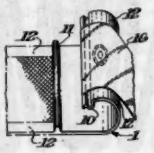


1. An apparatus for the extraction of a sample of solid material with a liquid which comprises two tubes one detachably superimposed to the other, the upper tube having the upper end open, a filter placed in the lower tube at a distance from its upper end, which filter serves as a container for said solid material, a frame for mounting the two tubes, means for tightly engaging the tubes together and for releasing the tubes by a substantially linear vertical motion, said means being located at the lower end of the upper tube, a multi-port valve detachably connected to the lower end of the lower tube to selectively introduce at least one liquid, compressed gas and vacuum from below the filter, whereby the compressed gas during the extraction stage pushes the sample of solid material upwardly into the upper tube, and wherein the lower end of the upper tube includes an elastic sleeve-shaped element which sealingly surrounds the lower portion of said upper tube and has a radially inwardly directed flange, the upper surface of which engages the lower edge of the tube and the lower surface of which engages the upper edge of the holder lower tube, and the flange of the sleeve-shaped element is provided with an outer annular groove in which is inserted an annular support means for taking up pressure forces against the flange of the elastic element.

4,184,962
TOTALLY WRAPPED COIL PERMEATION DEVICE AND ARTIFICIAL KIDNEY

Rolf A. Oscarsson, Pedricktown, N.J., and Albert E. Moore, Mainland, Pa., assignors to Extracorporeal Medical Specialties, Inc., Pa.

Continuation-in-part of Ser. No. 842,044, Oct. 14, 1977, abandoned. This application Jun. 19, 1978, Ser. No. 917,083
Int. Cl.² B01D *31/00*
U.S. Cl. 210—232 **13 Claims**

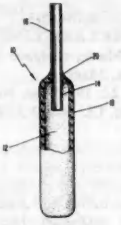


1. A totally wrapped coil dialyzer comprising fluid inlet and outlet ports, a tubular permeable membrane and a one-piece membrane support material having an embossed area surrounded by first and second end sections and thickened edge strips where the first end section is provided with interlock means for forming the core of the coil dialyzer and the second end section is provided with interlock means for forming the outer casing of the coil dialyzer when the support material is spirally wrapped upon itself.

4,184,963
IMMERSIBLE MOLECULAR FILTER UNIT AND PROCESS OF MAKING IT

Shmuel Sternberg, Lexington, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed Oct. 28, 1977, Ser. No. 846,330
Int. Cl.² B01D *31/00, 13/04*
U.S. Cl. 210—321 R **11 Claims**



1. A lightweight, laboratory-scale immersible filter unit shaped and dimensioned for insertion in a liquid-containing fluid sample in a test tube or similar laboratory scale container, comprising:

an elongate microporous base member having a substantially uniform and continuous transverse section of microporous character with a network of intercommunicating micropores;

a tubular conduit member connected to said base member, said conduit member being formed with a fluid-impervious body and with a bore that communicates with the intercommunicating porous network of the base member, said conduit member being adapted to be connected to a vacuum source, and

a permeable membrane disposed directly on, engaged against, and substantially coextensive with the entire exposed external surface of said microporous base member, without penetration of the material of the membrane into the intercommunicating porous network of the microporous base;

said permeable membrane being formed with an integral collar portion thereof engaged against the confronting underlying surface portion of said conduit member, said collar portion having a surface confronting and engaged against an underlying surface of the conduit member and being secured to said conduit member in substantially fluid-tight fashion,

the unit being sufficiently light in weight to permit its handling by the conduit member without contact with the membrane,

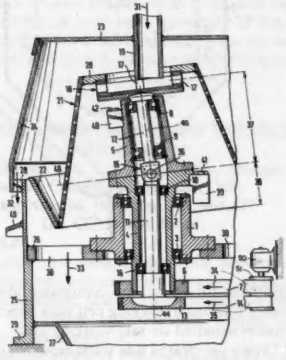
whereby the unit can be immersed in a liquid-containing fluid sample in a test tube or similar laboratory-scale container with the fluid completely covering the exposed outer surface of said membrane and, if desired, covering a portion of the conduit member, so that liquid passage through the device can occur through those portions of the membrane that are directly engaged against an underlying surface of said microporous body member,

whereby upon the immersion of the membrane portion of the unit in a liquid-containing fluid sample, and upon the application of suction to the bore of said conduit member, liquid can be drawn through said membrane and the intercommunicating network of pores of said base member into said conduit, thereby filtering said liquid.

4,184,964
CENTRIFUGE

Günther Hultsch, Oberschleissheim, Fed. Rep. of Germany, assignor to Krauss-Maffei AG, Munich, Fed. Rep. of Germany

Filed Jul. 14, 1978, Ser. No. 924,715
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736351
Int. Cl.² B01D *33/02*
U.S. Cl. 210—365 **10 Claims**



7. A centrifuge comprising:

a housing;

a tube shaft on said housing having one tube part centered on and rotatable about one axis and another tube part centered on and rotatable about another axis that crosses said one axis at an acute angle at an intersection;

an at least partially flexible core shaft having one core part rotatable in said one tube part about said one axis and another core part rotatable in said other tube part about said other axis;

a sieve drum carried on said other core part and centered generally on said other axis, said sieve drum having a lower edge spaced below said intersection, said sieve drum having a center of gravity lying above said intersection;

means for introducing a suspension to be centrifuged into said drum generally radially of said axes at a filling location spaced above said intersection;

means for rotating said tube shaft about said one axis and said

core shaft about both of said axes simultaneously at different angular speeds for advancing the solid phase of said suspension down inside said drum from said filling location toward said lower edge; and

a counterweight on and rotatable jointly with said tube shaft and so positioned and constituted as to compensate for the offcenter center of gravity of said drum, and position same above and in line with said one axis.

4,184,965

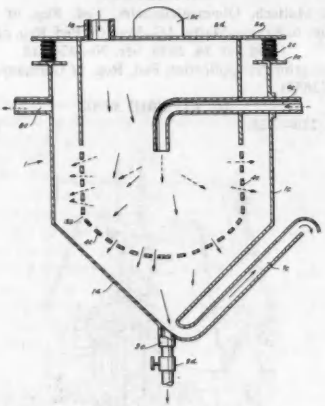
VIBRO-ACOUSTICAL EXTRACTION APPARATUS

Stoycho M. Stoev; Marin D. Mitrushev; Grozdan T. Boshilov, and Maria G. Radeva, all of Sofia, Bulgaria, assignors to Vish Minno-Geoloshki Institute-Nis, Sofia, Bulgaria

Continuation-in-part of Ser. No. 572,342, Apr. 28, 1975, abandoned. This application Dec. 6, 1976, Ser. No. 747,721

Int. Cl.[2] **B01D** *35/20*

U.S. Cl. 210—388 **1 Claim**



1. An apparatus for extraction, comprising in combination,

an enclosure forming a working cell with imperforate walls;

spring means mounted on said working cell;

a vessel having perforated side walls mounted on said spring means inside said working cell for vibratory movement, said vessel forming an independent chamber within said working cell;

a vibrator mounted on said vessel and adapted to impart to said vessel a vibratory movement;

said working cell having a first, outlet conduit for discharging fluid from said working cell and said vessel having a second, inlet conduit extending through the wall of said working cell and the perforated side wall of said vessel for feeding liquid into said vessel;

an upwardly inclined pulp discharge conduit means leading from the bottom of said cell to a raised discharge orifice;

said pulp discharge conduit being dimensioned to discharge pulp above the level of the lowest point of said vessel.

a solid material discharge conduit means connected to said cell adjacent to the bottom thereof;

a feeding solid material conduit mounted on the top of the vessel; and

a selectively operable shut-off valve operatively mounted on said solid discharge conduit means.

4,184,966

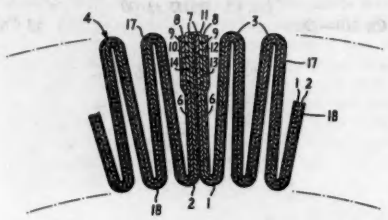
TUBULAR FILTER ELEMENTS WITH IMPROVED SIDE SEAM SEAL

David B. Pall, Roslyn Estates, N.Y.

Filed Sep. 29, 1977, Ser. No. 837,663

Int. Cl.[2] **B01D** *27/06, 29/06*

U.S. Cl. 210—493 B **16 Claims**



1. A tubular corrugated filter element comprising two layers of filter sheet material formed in a substantially tubular shape and having the inner surface of the end portions of the outer filter sheet and the outer surface of the end portions of the inner filter sheet in adjacent relation, and joined together in a side seam seal by way of an interposed self-supporting bonding channel strip of thermoplastic resinous material folded over the outer end edges of the inner filter sheet, so that the end edges thereof are embraced by the channel strip, the channel strip being bonded to the abutting surfaces of the inner and outer filter sheets, thereby sealing the edges of the two sheets together in a leak-tight seal, and blocking the escape of unfiltered liquid between the edges of the inner filter sheet of the tubular filter element into or out from the space enclosed by the inner filter sheet and preventing bypassing of unfiltered liquid from the upstream to the downstream sides of the filter sheets.

4,184,967

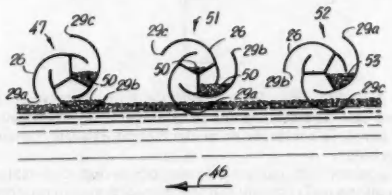
APPARATUS FOR CLARIFYING WASTE WATER

Milos Krofta, Lenox, Mass., assignor to Lenox Institute for Research, Inc., Lenox, Mass.

Filed Jun. 22, 1978, Ser. No. 917,954

Int. Cl.[2] **B03D** *3/00*

U.S. Cl. 210—525 **4 Claims**



1. Apparatus for purifying unclarified water in the paper, pulp, and like industries comprising,

a cylindrically shaped tank open at its upper end,

unclarified water inlet means for said tank,

clarified water outlet means for said tank,

sludge outlet means for said tank located centrally thereof,

scoop supporting means positioned radially of said tank at its open end,

means for rotatable movement of said scoop supporting means around the upper surface of said tank,

means for axial rotation of said scoop supporting means,

a scoop assembly including more than two substantially equally spaced scoop blades radially positioned about a center line and carried by said scoop supporting means at an angle sloping from the outer edge of said tank towards

the center portion thereof, said scoop blades extending radially substantially from the outer edge of said tank towards the center portion thereof, the blades of said scoops extending further from said center line in the direction towards the edge of said tank thereby providing substantially horizontal lip edges for engagement of sludge floating on unclarified water in said tank,

end face plates being provided for said scoop blades, and bearing means being provided at each end thereof to carry the scoop assembly in said supporting means,

an axially extending deflecting member being provided and being attached along at least a portion of said turned-in portion each scoop blade on the back side thereof,

a tubular member being provided and attached to said end face plate at the center portion of said tank leading to said sludge outlet means,

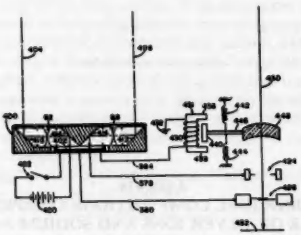
and baffle means being provided for said tubular member for each scoop blade dividing said tubular member axially, said axially extending deflecting members and baffle means cooperating to provide more than two trough means which function to feed said sludge from said tank substantially continuously through said tubular thereby substantially reducing the possibility of clogging thereof.

4,184,968

AUTO FOCUS SYSTEM

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 13, 1978, Ser. No. 876,972
Int. Cl.[2] G01J *1/20*
U.S. Cl. 250—201 **21 Claims**



1. Range sensing apparatus comprising in combination:

first radiation sensing means operable to produce a first output signal of magnitude that varies with the quantity of radiation thereon, said first radiation sensing means positioned so as to receive radiation from a remote object along a first path;

second radiation sensing means comprising a plurality of radiation detectors each operable to produce an output signal of magnitude that varies with the quantity of radiation thereon, said second radiation sensing means positioned so as to receive radiation from the remote object along a second path when the object is at a first range and along a third path when the object is at a second range, correlation being indicated when the sum of the radiation falling upon a first and a second of the radiation detectors of said second radiation sensing means being approximately the same as the radiation falling on said first radiation sensing means showing that the object is proximate the first range and correlation being indicated when the sum of the radiation falling upon the second and a third of the radiation detectors of said second radiation sensing means being approximately the same as the radiation falling on said first radiation sensing means showing that the object is proximate the second range

combining means operable in a first condition to connect the first and the second of the radiation detectors of said second sensing means to provide a first combined signal which varies with the sum of the output signals of the first and the second of the radiation detectors of said second sensing means and operable in a second condition to connect the second and the third of the radiation detectors of said second sensing means to provide a second combined signal which varies with the sum of the output signals of the second and the third of the radiation detectors of said second sensing means; and

means connected to said first radiation sensing means and to said combining means to compare the first output signal with the first combined signal and to compare the first output signal with the second combined signal and producing a resultant signal indicative of which comparison provided the closest correlation.

4,184,969

FIRE- AND FLAME-RETARDANT COMPOSITION

Vasanth K. Bhat, Hamilton County, Ohio, assignor to Bhat Industries, Inc., Cincinnati, Ohio

Filed Aug. 4, 1978, Ser. No. 931,199
Int. Cl.[2] C09K *3/28*
U.S. Cl. 252—8.1 **10 Claims**

1. An inorganic composition having excellent fire- and flame-retardant characteristics, low moisture absorption, and substantially no corrosiveness to aluminum, copper, and steel, consisting essentially of 10 to 25 parts by weight of alumina trihydrate, 20 to 35 parts by weight of ammonium sulfate, 20 to 35 parts by weight of borax, 10 to 20 parts by weight of boric acid, up to 25 parts by weight of nepheline syenite, and up to 2 parts by weight of soda ash.

9. Cellulose fiber thermal insulation containing from about 12% to about 18% by weight of said insulation of a fire- and flame-retardant composition consisting essentially of 10 to 25 parts by weight of alumina trihydrate, 20 to 35 parts by weight of ammonium sulfate, 20 to 35 parts by weight of borax, 10 to 20 parts by weight of boric acid, up to 25 parts by weight of nepheline syenite, and up to 2 parts by weight of soda ash.

4,184,970

ANTISTATIC, FABRIC-SOFTENING DETERGENT ADDITIVE

Ellsworth R. Draper, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 16, 1978, Ser. No. 961,447
Int. Cl.[2] D06M *13/34*
U.S. Cl. 252—8.8 **37 Claims**

1. A particulate detergent additive for preventing static buildup on textiles and softening fabrics when applied thereto from a laundry solution, said particulate additive being substantially free of organic agglomerating agents, consisting essentially of an agglomerate of:

(a) from about 5% to about 75% by weight of a water-soluble neutral or alkaline salt,

(b) from about 5% to about 75% by weight of an intimate mixture of

(i) from about 99.9% to about 20% by weight of a quaternary ammonium compound of formula $[R_1R_2R_3R_4N]^+Y^-$ wherein at least one, but not more than two, of R_1, R_2, R_3, and R_4 is an organic radical containing a group selected from a C_{16}–C_{22} aliphatic radical, or an alkyl phenyl or alkyl benzyl radical having 10 to 16 carbon atoms in the alkyl chain, the remaining group or groups being selected from C_1–C_4 alkyl, C_2–C_4 hydroxyalkyl, and cyclic structures in which the nitrogen atom forms part of the ring, Y constituting an anionic radical selected from the group consisting of hydroxide, halide, sulfate, methylsulfate, ethylsulfate and phosphate ions, and

(ii) from about 0.1% to about 80% by weight of a dispersion inhibitor, being a solid organic material having a solubility in water of 50 ppm maximum at 25° C. and a softening point in the range of 75° F. to 250° F., said material being selected from the group consisting of

paraffinic waxes, cyclic and acylic mono- and polyhydric alcohols, substituted and unsubstituted aliphatic carboxylic acids, esters of the foregoing alcohols and acids, C_3–C_4 alkylene oxide condensates of any of the foregoing materials and mixtures thereof, and (c) from about 5% to about 75% by weight of water, substantially all of the additive particles having a size of about 10μ to about 500μ, a solubility in water of about 50 ppm maximum at 25° C., and a softening point of from about 75° F. to about 250° F.

4,184,971

FERROMAGNETICPIEZOELECTRIC CERAMIC COMPOSITION

Yoichi Tanaka; Masamichi Tsuruta; Koji Takahashi, all of Chiba; Tsutomu Hasegawa, Tokyo, and Makoto Hori, Chiba, all of Japan, assignors to TDK Electronic Co., Tokyo, Japan

Continuation of Ser. No. 709,714, Jul. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 420,653, Nov. 30, 1973, Pat. No. 4,087,366. This application Aug. 26, 1977, Ser. No. 828,193

The portion of the term of this patent subsequent to Mar. 2, 1995, has been disclaimed.

Int. Cl.[2] **C04B** *35/46, 35/48*

U.S. Cl. 252—62.9 **1 Claim**

1. A piezoelectric ceramic composition of the formula: $x(Ba_2Sb_2O_7)\frac{1}{3}.(1-x)[y(PbTiO_3)z(PbZrO_3)]$ wherein $0.01 \leqq x \leqq 0.07$; $0.47 \leqq y \leqq 0.51$; $0.49 \leqq z \leqq 0.53$ and $y \pm z = 1.0$ and containing 0.1–1.0 wt.% MnO_2 and wherein said piezoelectric ceramic composition possesses a dielectric loss value tan δ less than 0.3%, an electromechanical coupling coefficient Kp of 60% to 74.5% and a dielectric constant ε value of 1000 to 1800 prepared by a process, comprising:

individually forming lead titanate, lead zirconate and barium antimonate components by separately calcining mixtures of lead oxide-titanium oxide, lead oxide-zirconium oxide, and barium oxide-antimony oxide;

mixing said components with MnO_2 in an amount of 0.1 to 1.0 wt.% to provide a mixture in which said lead titanate, lead zirconate and barium antimonate are present in amounts that satisfy said formula; and

sintering said mixture at a temperature greater than 1000° C. to form said piezoelectric composition.

4,184,972

MAGNETODIELECTRIC MATERIAL

Lev V. Pevzner, ulitsa Chkalova 52, kv. 54, Moscow; Alexandr N. Ustkachkintsev, ulitsa Kozlova 11, kv. 29, Orekhovo-Zuevo Moskovskoi oblasti; Boris V. Yakobson, ulitsa Pravdy 11, kv. 36, Orekhovo-Zuevo Moskovskoi oblasti; Andrei V. Timofeev, ulitsa Dzerzhinskogo 65, Orekhovo-Zuevo Moskovskoi oblasti; Anna A. Furman, ulitsa Gagarina 4, kv. 23, Orekhovo-Zuevo Moskovskoi oblasti; Sergei E. Vaskanov, ulitsa G. Kochara 9, kv. 31, Erevan; Vadim V. Alexeevsky, ulitsa Kalinina 2, kv. 14, Erevan; Jury S. Chatinian, ulitsa Tamanina 1, kv. 6, Erevan; Felix K. Makarov, ulitsa P. Osipenko 10, kv. 13, Vladimir; Vladimir I. Radin, ulitsa Stroitelei 6, korpus 4, kv. 16, Moscow, and Viktor M. Petrov, ulitsa Fligina 10, Vladimir, all of U.S.S.R.

Filed Jul. 31, 1978, Ser. No. 929,360

Int. Cl.[2] **H01F** *1/00, 1/37*

U.S. Cl. 252—62.54 **8 Claims**

1. A homogeneous iron-based magnetodielectric material comprising a thermoreactive binder in the form of modified and non-modified phenol formaldehyde resins, and a filler in the form of a fibrous filler preliminarily impregnated with said resins, the components being used in the following quantities, in % by weight:

thermoreactive binder—8 to 25

impregnated fibrous filler—5 to 20

lubricant—0.5 to 1.5

iron—the balance.

4,184,973

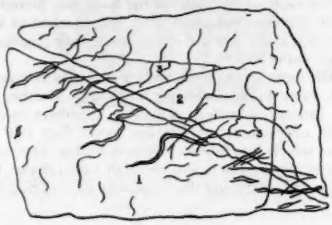
HAIR GROOMING AID CONTAINING FIBRILLATABLE POLYTETRAFLUOROETHYLENE RESIN

Glen A. Shaw, Lyndhurst, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio

Division of Ser. No. 580,143, May 23, 1975, Pat. No. 4,047,537, which is a continuation-in-part of Ser. No. 373,585, Jun. 25, 1973, abandoned. This application Sep. 12, 1977, Ser. No. 832,245

Int. Cl.[2] **C11D** *1/00, 7/30;* **A61K** *7/06*

U.S. Cl. 252—174.23 **1 Claim**



1. A hair grooming aid consisting essentially of a shampoo and between about 0.001% and about 5% by weight of fibrillatable polytetrafluoroethylene resin particles dispersable or dispersed therein, wherein the primary particle size is in the range of less than about 1 micron in diameter.

4,184,974

LIQUID BIOCIDAL COMPOSITIONS COMPRISING A MIXTURE OF SILVER IONS AND SODIUM PECTATE

James W. Van Leuven, 2204 High Mesa Dr., Duarte, Calif. 91010

Continuation-in-part of Ser. No. 693,622, Jun. 7, 1976, abandoned, which is a continuation of Ser. No. 470,629, May 16, 1974, abandoned. This application Mar. 11, 1977, Ser. No. 776,776

Int. Cl.[2] **C11D** *1/22, 3/48*

U.S. Cl. 252—106 **9 Claims**

1. A liquid biocidal composition comprising:

dodecyl benzene sulfonic acid or water soluble salt thereof in the range of from about 2.5 to 6% by weight;

lauryl diethanolamide in the range of from about 2.7 to about 6.5% by weight;

triethanolamine in the range of from about 1.1 to 3.0% by weight;

propylene glycol in the range of from about 1.2 to about 2.5% by weight;

glycerine in the range of from about 4 to about 10% by weight;

sodium polypectate in the range of from about 100 to about 400 parts per million;

silver ion in the range of from about 13 to about 250 parts per million;

sufficient ammonium hydroxide to maintain a pH in the range of from about 7.2 to about 7.8; and

a balance primarily of sterile distilled water substantially free of alkaline earth cations, halide ions, and strong acid anions.

4,184,975

POURABLE AGGLOMERATED ALUMINOSILICATE BUILDER COMPOSITIONS FOR WASHING AND CLEANSING AGENTS

Peter Krings, Krefeld; Josef Huppertz, Dusseldorf-Holthausen; Herbert Reuter, Hilden; Dieter Kühling, Monheim; Milan J. Schwuger, Haan, and Heinz Smolka, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 618,343, Oct. 1, 1975, abandoned. This application Dec. 14, 1977, Ser. No. 860,611

Claims priority, application Austria, Oct. 3, 1974, 7967/74

Int. Cl.[2] C01B *33/28;* C11D *3/06, 3/12, 11/00*

U.S. Cl. 252—140 11 Claims

1. A process for the production of a pourable agglomerated aluminosilicate builder composition which consists essentially of intimately mixing from 50 to 75 parts by weight of at least one moist, finely-divided synthetically-produced, water-insoluble aluminosilicate compound having a water content of from 30% to 60% by weight, a calcium binding power of from 100 to 200 mg CaO/gm of anhydrous active substance when measured at 22° C. by the Calcium Binding Power Test Method set out in the specification, a particle size of from 0.1 to 30μ, and the formula on the anhydrous basis

$$(M_2O)_x.Me_2O_3.(SiO_2)_y$$

where M is a cation selected from the group consisting of sodium and potassium, x is a number from 0.7 to 1.1, Me is a member selected from the group consisting of aluminum and boron, and y is a number from 1.3 to 3.3, with from 25 to 50 parts by weight of at least two substantially-anhydrous, finely-powdered alkali metal salts capable of binding water as water of crystallization or hydration selected from the group consisting of tripolyphosphates, pyrophosphates, sulfates, carbonates, and metasilicates, at least one of said salts being alkali metal tripolyphosphate, wherein each of said at least two water-soluble alkali metal salts is present in an amount, on the anhydrous basis, of 10% by weight of the weight of said water-soluble alkali metal salts, and recovering said agglomerated aluminosilicate builder composition.

8. The agglomerated aluminosilicate builder composition produced by the process of claim 1.

4,184,976

METHOD OF MAKING METALLIC OXIDE OR CARBIDE PARTICLES

Erich Zimmer, Julich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 681,749, Apr. 29, 1976, abandoned, which is a continuation of Ser. No. 467,729, May 7, 1974, abandoned. This application Nov. 22, 1977, Ser. No. 854,008

Claims priority, application Fed. Rep. of Germany, May 8, 1973, 2323072

Int. Cl.[2] C01G *43/02;* C04B *35/00*

U.S. Cl. 252—301.1 S 9 Claims

1. A method of making uranium oxide particles for material for nuclear reactors, which includes in combination the steps of: to an aqueous solution of a uranium salt selected from the group consisting of uranyl nitrate and uranyl chloride, adding for every mole of uranium contained in the solution, 1 to 3 moles of an ammonium salt, 2 to 6 moles of urea, passing said solution by drops through a column working at room temperature, said column containing a ketone phase floating above aqueous ammonia solution, said ketone phase having a solubility for water not greater than approximately 4% by weight and a viscosity between one-half and twice the viscosity of water, passing said aqueous uranium salt solution by drops in order to form gel-like uranium oxide particles, and subsequently washing, drying and sintering said particles thus formed.

4,184,977

FLUORESCENT DYESTUFFS

Udo Eckstein, Cologne, and Hans Theidel, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

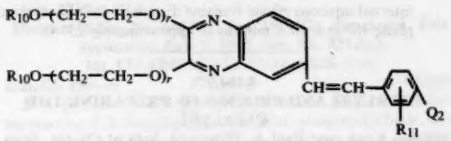
Filed Jul. 5, 1978, Ser. No. 922,186

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730644

Int. Cl.[2] C07D *403/00, 413/00*

U.S. Cl. 252—301.22 3 Claims

1. Fluorescent dyestuff having the formula



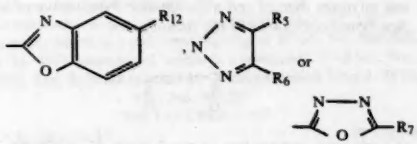
wherein

R_{10} denotes C_1–C_4-alkyl,

R_{11} denotes hydrogen or cyano,

r denotes an integer from 0 to 2,

Q_2 denotes a radical of the formulae



R_{12} denotes hydrogen, chlorine, C_1–C_4-alkyl, phenyl-C_1–C_3-alkyl, cyclohexyl, phenyl, C_1–C_4-alkoxy, C_1–C_4-alkylsulphonyl, C_1–C_4-alkoxycarbonyl, cyano or carboxyl,

R_5 denotes C_1–C_4-alkyl, phenyl or styryl or, together with R_6, a fused-on benzo ring which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy or chlorine or fused-on naphtho,

R_6 denotes hydrogen, C_1–C_4-alkyl or phenyl or, together with R_5, a fused-on benzo ring which is optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy or chlorine or fused-on naphtho, and

R_7 denotes phenyl, styryl, biphenylyl or naphthyl, optionally substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl, cyano or chlorine.

4,184,978

STABLE WATER IN OIL EMULSION SYSTEMS FOR COSMETIC AND PHARMACEUTICAL PREPARATIONS

James R. France, Overland Park; Fred Balocchi, Prairie Village, both of Kans., and George A. Concar, Bloomingdale, Ill., assignors to C. J. Patterson Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 793,534, May 4, 1977, abandoned. This application Dec. 16, 1977, Ser. No. 861,362

Int. Cl.[2] B01J *13/00*

U.S. Cl. 252—309 25 Claims

1. A stable water-in-oil emulsion system for cosmetic and pharmaceutical preparations comprising:

a substantially continuous, external liquid oleaginous phase;

a liquid non-homogenized internal aqueous phase comprising a sufficient amount of small aqueous globules dispersed in said external phase to present a collective quantity thereof initially of the order of about one micron in size at the time of dispersion and present within the range of from about 70% to about 80% on a weight to weight basis of the two phases; and

an emulsifier composition combined with said phases which

is capable of maintaining the water dispersed in the oleaginous phase for an extended period and comprising cooperatively effective amounts of at least (1) a di- or tri-valent salt of the esterification product of a C_{10} to C_{22} fatty acid with a hydroxycarboxylic acid containing 2 to 4 carbon atoms and (2) a co-emulsifier non-reactive and compatible with emulsifier (1) said co-emulsifier being a derivative of a fatty acid or fatty alcohol which is different from the fatty acid radical of emulsifier (1) and having an HLB value and present in a quantity to (a) cause said emulsifier composition to have an effective HLB value within the range of about 4.6 to about 6.6 and (b) assure that the internal aqueous phase remains dispersed in said external phase for at least 6 months at approximately 25° C.

4,184,979

CATALYST AND PROCESS OF PREPARING THE CATALYST

William Kirch, and Paul A. Thompson, both of Clinton, Iowa, assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Jul. 17, 1978, Ser. No. 925,417

Int. Cl.[2] C08F *4/22, 4/76*

U.S. Cl. 252—430 **19 Claims**

1. A catalyst prepared by the process of (1) forming a mixture of a finely divided, difficultly reducible, support of the class consisting of silica, alumina, zirconia, thoria, magnesia and mixtures thereof and a chromium^{+3} derivative of a beta-dicarbonyl compound of the formula

$$Cr(R-\overset{\overset{O}{\|}}{C}-CH-\overset{\overset{O}{\|}}{C}-R)_3$$

or a chromic carboxylate of the formula $Cr(OOCR)_3$ in an amount to provide about 0.1–30 weight percent of chromium in said catalyst, wherein each R is individually selected from hydrogen or a hydrocarbyl group of 1–20 carbon atoms, (2) heating the mixture of (1) in a stream of dry, inert, and non-oxidizing gas to a temperature of about 230°–540° C., and then (3) forming a second combination by adding a titanium compound to the product of (2) at a temperature ranging from 95°–370° C., said titanium compound having the formula $(R')_nTi(OR')_m$ or $(R'O)_mTi(OR')_n$ in which R' is the same or different and is hydrogen or a hydrocarbyl group of 1–12 carbon atoms and in which m is 1–4, n is 0–3 and m plus n equals 4 and being present in an amount to give about 0.5–10 weight percent of titanium in said catalyst, and then (4) activating the mixture of (3) by heating in a stream of dry, oxidizing gas to a temperature of about 370°–1100° C.

4,184,980

SULFURIC ACID CATALYST AND PROCESS THEREFOR

Fawzy G. Sherif, Stony Point, N.Y., and W. Novis Smith, Quakertown, Pa., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 21, 1977, Ser. No. 862,807

Int. Cl.[2] B01J *27/02, 27/02;* **C01B** *17/68*

U.S. Cl. 252—436 **6 Claims**

1. A method of making a catalyst for the oxidation of sulfur dioxide to sulfur trioxide which comprises:

passing sulfur dioxide gas into an aqueous mixture of vanadium oxide, sulfuric acid and a potassium salt selected from the group consisting of potassium sulfate, potassium sulfite, potassium oxalate and potassium formate in situ at a temperature between about 25° C. and about 120° C. to provide a clear blue solution;

impregnating diatomaceous earth with said solution;

shaping the impregnated diatomaceous earth into pellets;

drying the impregnated diatomaceous earth pellets; and

calcining the dried diatomaceous earth pellets, thereby providing an active catalyst.

4,184,981

SELECTIVE OXIDATION CATALYST

Thomas H. Vanderspurt, Gillette, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 832,712, Sep. 12, 1977. This application Nov. 14, 1978, Ser. No. 960,642

Int. Cl.[2] B01J *27/14, 29/16*

U.S. Cl. 252—437 **5 Claims**

1. A process for preparing an improved selective oxidation catalyst which comprises (1) preparing an aqueous solution of ammonium molybdate; (2) dissolving in the said aqueous solution at least one water-soluble compound of an element selected from phosphorus, manganese, germanium, zirconium, tin, tellurium, cerium and hafnium; (3) admixing with said aqueous solution at least one water-insoluble compound of a metal selected from titanium, vanadium, niobium, antimony, and tantalum to form a suspension; (4) removing the aqueous phase of said suspension and recovering a solid catalyst precursor; (5) heating said solid catalyst precursor at a temperature between about 150° C. and 300° C. for a period of time between about 1 and 48 hours; (6) compressing the dried catalyst precursor under a pressure of between about 40,000 and 80,000 psi; and (7) calcining the compressed catalyst precursor at a temperature between about 400° C. and 700° C. in a non-reducing atmosphere; wherein the atomic ratio of elements in the catalyst varies between about 0.3 and 2.4 atoms selected from phosphorus, manganese, germanium, zirconium, tin, tellurium, cerium and hafnium, and between about 0.4 and 3.6 atoms selected from titanium, vanadium, niobium, antimony and tantalum, per twelve atoms of molybdenum.

2. A process in accordance with claim **1** wherein the said selective oxidation catalyst is supported on a carrier substrate.

4,184,982

PREPARATION OF A SILICATE HYDROGENATION CATALYST

Wolfgang Schroeder, Bad Durkheim, and Wolfgang Franzischka, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft

Filed Jun. 13, 1978, Ser. No. 915,011

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1977, 2726720

Int. Cl.[2] B01J *37/02, 29/00, 29/10*

U.S. Cl. 252—452 **11 Claims**

1. A process for the preparation of a hydrogenation catalyst which contains copper, nickel or cobalt on a silica carrier, wherein an aqueous solution of a salt of copper, nickel and/or cobalt is mixed with an alkali metal silicate solution, containing excess alkali metal hydroxide, in such amount that the mixture reacts approximately neutral and the weight ratio of copper, nickel and/or cobalt to silica in the finished catalyst is from 0.5 to 2, and, using conventional methods, the precipitate formed on mixing is isolated, molded, dried and treated with a reducing agent.

2. The process of claim **1**, wherein an alkali metal silicate solution is used in which the molar ratio of Me_2O to SiO_2, where Me is potassium or sodium, is greater than 0.5.

4,184,983

FILTER MATERIAL FOR REMOVAL OF OZONE FROM THE ATMOSPHERE

Patricia J. Putz, Highwood; Marie A. Lishka, Mt. Prospect, and Edwin J. Latos, Chicago, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Mar. 17, 1978, Ser. No. 888,049

Int. Cl.[2] B01J *21/04, 23/42, 23/46*

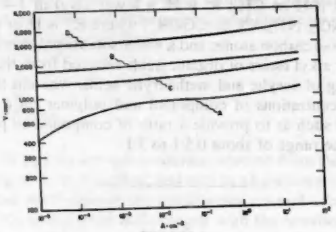
U.S. Cl. 252—466 PT **6 Claims**

1. A filter material for the removal of ozone from the atmosphere which comprises a combination of platinum and rhodium metal and a carbonaceous pyropolymer composited on a solid support.

4,184,984
HIGH BREAKDOWN VOLTAGE VARISTOR

Lionel M. Levinson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 721,052, Sep. 7, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,600
Int. Cl.[2] H01B *1/08*
U.S. Cl. 252—518 10 Claims



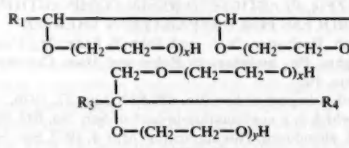
1. A metal oxide varistor exhibiting a breakdown voltage in excess of 1,200 $v \cdot mm^{-1}$ at a current density of 10^{-3} amp-cm^{-2} comprising the reaction product formed by sintering a mixture including a major portion of zinc oxide (ZnO) with bismuth trioxide (Bi_2O_3), and between approximately 10 mol percent and approximately 25 mol percent silicon dioxide (SiO_2) at temperatures between approximately 1100° C. and 800° C.

4,184,985
STABLE, AQUEOUS OR AQUEOUS-ALCOHOLIC SOLUTIONS OF FAT-SOLUBLE PERFUME OILS CONTAINING HYDROXYALKYL ETHER-ETHOXYLATES

Fanny Scheuermann; Jochen Heidrich, both of Düsseldorf, and Martin Bischoff, Gelsenkirchen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 11, 1978, Ser. No. 923,575
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1977, 2732218
Int. Cl.[2] C11B *9/00*
U.S. Cl. 252—522 9 Claims

1. Clear, stable, aqueous or aqueous-alcoholic solutions of a fat-soluble ethereal perfume oil, consisting essentially of (1) from 0.5 to 5% by weight, relative to the total weight of the solution, of a hydroxyalkyl ether-ethoxylate intermediary of the formula



wherein R_1 and R_2 independently of each other are a member selected from the group consisting of alkyl having 1 to 24 carbon atoms, or R_3 and R_4 independently of each other are a member selected from the group consisting of alkyl having 2 to 22 carbon atoms and hydrogen, and x and y independently of each other are an integer from 1 to 16, with the proviso that the total of the carbon atoms of R_1+R_2 or R_3+R_4 is from 2 to 26, and with the further proviso that the total of the integers x+y is from 2 to 18, (2) from 0.1 to 1% by weight relative to the total weight of the solution of a fat-soluble etheral perfume oil, wherein the amount of said ester-ethoxylate intermediary is at least four times the amount of said perfume oil, (3) from 0 to 10% by weight of a water-miscible alcohol, and (4) the remainder to 100% by weight of the conventional substances used in said solutions including water where the amount of water or water and alcohol is from 70 to 99% by weight, relative to the total weight of the solution.

4,184,986
NOVEL CONDENSATION PRODUCTS HAVING HIGH ACTIVITY TO INSOLUBILIZE PROTEINS AND PROTEIN-INSOLUBILIZED PRODUCTS

Victor Krasnobajew, Zollikerberg, and Regula Boeniger, Greifensee, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 605,965, Sep. 19, 1975, abandoned. This application Aug. 3, 1977, Ser. No. 821,663
Int. Cl.[2] C08L *61/20, 61/32;* C12K *1/00*
U.S. Cl. 260—6 1 Claim

1. A protein bonded to the condensation product obtained by reacting 1,3-phenylene-diamine with glutardialdehyde, said product comprising spherical, homogeneous particles capable of good filtration.

4,184,987
STABILIZING ADDITIVES FOR POLYOLEFINS

Nicholas M. Karayannis; Habet M. Khelghatian, and John S. Skryantz, all of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 763,053, Jan. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 589,609, Jun. 23, 1975, abandoned, which is a continuation of Ser. No. 432,070, Jan. 9, 1974, abandoned. This application May 1, 1978, Ser. No. 901,587
Int. Cl.[2] C08K *5/52*
U.S. Cl. 260—23 H 26 Claims

1. A stabilized composition comprising a highly crystalline polyolefin selected from the group consisting of polybutene-1, poly-4-methylpentene-1, polypropylene, polyethylene, and copolymers of propylene or ethylene with at least one other C_2 to C_8 terminal olefin, said polyolefin prepared by an essentially solvent-free, anionically catalyzed polymerization process wherein catalyst residues and low molecular weight and amorphous components are incompletely separated from the highly crystalline polyolefin; and a stabilizing amount of a partially esterified polyhydroxyl compound of the formula $(HOCH_2)_m C (CH_2OZ)_{4-m}$, wherein Z is H or COR, at least one Z is COR, m runs from 1 to 3, and R is an aliphatic group containing from about 8 to about 20 carbon atoms.

4,184,988
PROCESS FOR THE SULFONATION OF AN ELASTOMERIC POLYMER

Henry S. Makowski, Scotch Plains; Robert D. Lundberg, and Jan Bock, both of Bridgewater, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 855,701, Nov. 29, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,394
Int. Cl.[2] C08L *91/00*
U.S. Cl. 260—23.5 A 18 Claims

1. A process for sulfonating an unsaturated polymer to form a sulfonated polymer, which comprises the steps of:

(a) forming a cement of said unsaturated polymer in a non-reactive solvent; and

(b) contacting said cement with a sulfonating agent at a temperature of about −100° C. to about +100° C. for a sufficient period of time to form a sulfonated polymer having about 15 to about 50 meq. of sulfonate groups per 100 grams of said sulfonated polymer, said sulfonating agent being a mixture of RCO_2SO_3H and a second reagent which is selected from the group consisting of $(RCO)_2O$ and RCO_X, a molar ratio of said second reagent to said RCO_2SO_3H being at least about one, wherein R is selected from the group consisting of CH_3—, C_2H_5—,

C_3H_7—, C_4H_9—, C_5H_{11}—, C_6H_{13}—, and $C_6H_5CH_2$ and mixtures thereof, and X is selected from the group consisting of F, Cl and Br.

4,184,989

THERMALLY LINKABLE AQUEOUS POLYURETHANE DISPERSIONS

Werner Flakus, Recklinghausen, and Josef Disteldorf, Herne, both of Fed. Rep. of Germany, assignors to Veba-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Fed. Rep. of Germany

Filed Aug. 30, 1976, Ser. No. 718,233

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1975, 2538484

Int. Cl.[2] **C08J** *3/10;* **C08L** *75/06*

U.S. Cl. 260—29.2 TN **2 Claims**

1. In a process for the preparation of a solvent-free exclusively aqueous dispersion of a thermally linkable, storage stable, light stable polyurethane wherein:

(a) a hydroxy group containing polyester composition is reacted with a diisocyanate in a ketone solvent at 10°–50° C.;

(b) employing the hydroxy containing polyester and diisocyanate in amounts such that there are 1.5–2.0 NCO equivalents per OH group to obtain an intermediate reaction product;

(c) the intermediate reaction product is thereafter reacted with a primary diamine, secondary diamine or diol in such an amount that 30–70% of the existing free NCO groups on said reaction product are reacted and the resultant reaction product is dispersed with an anionic tenside surfactant in water and said ketone solvent is removed;

the improvement which comprises employing as the diisocyanate the uretdione of 3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate.

4,184,990

PROCESS FOR THE PREPARATION OF STABLE DISPERSIONS OF POLYISOCYANATE-POLYADDITION PRODUCTS IN A HYDROXYL CONTAINING COMPOUND AS DISPERSING AGENT

Artur Reisehl, Leverkusen, and Armin Zenner, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 10, 1976, Ser. No. 740,465

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1975, 2550860

Int. Cl.[2] **C08L** *75/04*

U.S. Cl. 260—29.2 TN **2 Claims**

1. A process for the preparation of a stable dispersion of a polyisocyanate-polyaddition product selected from the group consisting of polyurethanes, polyureas and polyhydrazodicarbonamides, in a compound which has at least two hydroxyl groups as a dispersing agent, the process comprising mixing an aqueous dispersion of said polyisocyanate-polyaddition product with said compound which has at least two hydroxyl groups and a boiling point above 100° C., and at least partially distilling off the water.

4,184,991

CORROSION INHIBITING COMPOSITION FOR FERROUS METALS AND METHOD OF TREATING WITH SAME

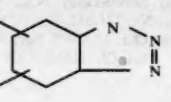
Clarence Scheurman, III, Bay Village, Ohio, assignor to Zimmite Corporation, Westlake, Ohio

Filed Mar. 13, 1978, Ser. No. 886,146

Int. Cl.[2] **C08K** *5/29*

U.S. Cl. 260—29.6 MN **11 Claims**

1. A composition useful for inhibiting corrosion of ferrous metals in aqueous systems comprising an aqueous vehicle containing from about 2 to about 20 ppm by weight of a compound selected from the group consisting of compounds having the formula



where R is H or CH_3; R′ is H, a lower alkyl of 1–4 carbon atoms, NO_2, NH_3, Cl, or COOR″, where R″ is H or a lower alkyl of 1–4 carbon atoms; and a water soluble polymer formed of lower alkyl esters of organic acids selected from the group consisting of acrylic and methacrylic acids, wherein the relative concentrations of compound and polymer on a weight basis are such as to provide a ratio of compound to polymer within the range of about 0.5:1 to 3:1.

4,184,992

CROSS-LINKED ALKYL METHACRYLATE-N-VINYLLACTAM POLYMER COMPOSITION FOR USE IN SOFT CONTACT LENSES

Shuntaro Hosaka, Kamakura, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 3, 1977, Ser. No. 848,357

Claims priority, application Japan, Nov. 4, 1976, 51/132538

Int. Cl.[2] **C08L** *39/06, 33/10, 31/06*

U.S. Cl. 260—29.7 T **12 Claims**

1. A cross-linked polymer composition providing a transparent polymeric gel having an equilibrium water content of at least 60% by weight based on the weight of the polymeric gel for use in soft contact lenses, which polymer composition is prepared by polymerizing, using a bulk polymerization procedure, a monomer mixture consisting essentially of an alkyl methacrylate and an N-vinyllactam in the presence of at least one cross-linking agent selected from the group consisting of vinyl acrylate, vinyl methacrylate, triallyl isocyanurate and vinyl carboxylates expressed by the formula:

$$R—COOCH{=}CH_2)_n$$

where R is a hydrocarbon radical having 1 to 10 carbon atoms and n is an integer of 2, 3 or 4.

4,184,993

PLASTICIZER, PLASTICIZED RESIN COMPOSITION AND PROCESS FOR PREPARATION THEREOF

Udai P. Singh, Rochester, N.Y., and John T. Lutz, Jr., Cornwells Heights, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 680,544, Apr. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 614,462, Sep. 18, 1975, abandoned. This application May 4, 1977, Ser. No. 793,655

Int. Cl.[2] **C08K** *5/10, 5/11*

U.S. Cl. 260—31.2 R **15 Claims**

1. A blend of about 1 to 600 parts by weight of a plasticizer which is the free radical polymerization product of (A) one or more monoethylenically unsaturated hydrocarbons having 6 to 18 carbon atoms wherein said monoethylenically unsaturated hydrocarbon is an oligomer, and (B) one or more C_1–C_6 esters of monoethylenically unsaturated monocarboxylic acids, or diesters of dibasic acids, the number average molecular weight being about 500 to 6000, the molar ratio of (A) to (B) being about 0.1/1 to 1.5/1, with about 100 parts of a different polymer.

4,184,994
PLASTICIZED POLYCARBONATE COMPOSITION EMPLOYING SOLID KETONES

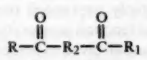
Victor Mark, Evansville, and Phillip S. Wilson, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Mar. 24, 1977, Ser. No. 781,054
Int. Cl.[2] C08K 5/07; C09L 69/00
U.S. Cl. 260—32.8 R 6 Claims

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of an organic solid plasticizer selected from the following formulae:

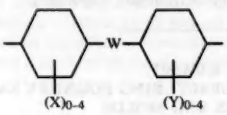
I.

wherein R and R_1 are independently selected from the group consisting of C_1 to C_{30} alkyl, aryl of 6 to 14 carbon atoms and substituted aryl wherein the substituents on said substituted aryl are C_1 to C_{30} alkyl and halogen with the proviso that R together with R_1 may be part of a ring system of 1 to 3 rings, which rings may be substituted by C_1 to C_{30} alkyl, halogen, C_1 to C_{30} alkoxy, aryl of 6 to 14 carbon atoms and cycloalkyl of 4 to 10 carbon atoms;



II.

wherein R and R_1 are as defined as above, R_2 is C_1 to C_{30} alkylene, arylene of 6 to 14 carbon atoms, alkarylene of 7 to 30 carbon atoms, aralkylene of 7 to 30 carbon atoms and



wherein W is $—(CH_2)_n—$; wherein n is an integer of 1 to 10 and X and Y are independently selected from the group consisting of halogen and C_1–C_{12} alkyl.

4,184,995
FLAME INSULATIVE SILICONE COMPOSITIONS

Maynard G. Noble, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Nov. 5, 1976, Ser. No. 739,162
Int. Cl.[2] C08L 83/04
U.S. Cl. 260—37 SB 9 Claims

1. A flame insulative room temperature vulcanizable silicone rubber composition comprising (a) 100 parts by weight of silanol end-stopped diorganopolysiloxane having a viscosity varying from 1,000 to 200,000 centipoise viscosity at 25° C.; (b) from 50 to 300 parts by weight of an inert filler selected from the class consisting of fumed silica and precipitated silica; (c) from 25 to 150 parts by weight of glass frits; (d) from 1 to 15 parts by weight of a silicate having the formula,

$$R_a^1Si(OR^2)_{4-a}$$

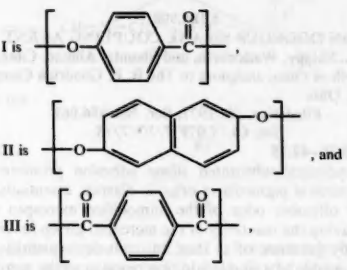
and partial hydrolysis products thereof, where R^1 and R^2 are selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, a is 0 or 1, and (e) from 0.01 to 5 parts by weight of the metal salt of a carboxylic acid the metal varying from lead to manganese in the Periodic Table.

4,184,996
MELT PROCESSABLE THERMOTROPIC WHOLLY AROMATIC POLYESTER

Gordon W. Calundann, North Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 832,147, Sep. 12, 1977, abandoned. This application Feb. 15, 1978, Ser. No. 877,917
Int. Cl.[2] C08G 63/18, 63/60
U.S. Cl. 260—40 R 15 Claims

1. An improved melt processable wholly aromatic polyester capable of forming a thermotropic melt phase at a temperature below approximately 325° C. consisting essentially of the recurring moieties I, II, and III wherein:



wherein said polyester comprises approximately 30 to 70 mole percent of moiety I, and wherein each of said moieties of said polyester is free of ring substitution.

4,184,997
COPOLYETHER-ESTERS AS ADDITIVES FOR FIBER-REINFORCED POLYETHYLENE TEREPHTHALATE

Souheng Wu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 22, 1978, Ser. No. 889,040
Int. Cl.[2] C08K 7/14; C08L 67/02
U.S. Cl. 260—40 R 7 Claims

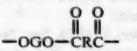
1. A fiber-reinforced polyethylene terephthalate molding composition which produces injection molded articles having reduced surface roughness which comprises:

(A) 20–80% by weight of polyethylene terephthalate, having a relative viscosity of 12–90;

(B) 5–50% by weight of reinforcing fibers; and

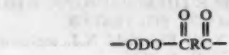
(C) 6–60% by weight of a copolyether-ester having a number-average molecular weight of 3,000–75,000, said copolyether-ester consisting essentially of a multiplicity of recurring intralinear long-chain and short-chain ester units connected through ester linkages,

(a) said long-chain ester units having the formula:



wherein G is the divalent radical remaining after removal of the terminal hydroxyl groups from a poly(alkylene oxide) glycol having a carbon-to-oxygen mole ratio of 2–4.3 and a number-average molecular weight of 400–6000; and R is the divalent radical remaining after removal of the carboxyl groups from a dicarboxylic acid having a molecular weight of less than 300; and

(b) said short-chain ester units having the formula:



wherein D is the divalent radical remaining after removal of the hydroxyl groups from a low molecular weight diol having a molecular weight of less than 250; and R is as defined above;

with the proviso that the short-chain ester units constitute 40–90% by weight of the polyether-ester, and the long-chain ester units constitute 10–60% by weight of the copolyether-ester.

4,184,998

NON ODOROUS SILANE COUPLING AGENT

Ronald L. Shippy, Wadsworth, and Shamim Ahmad, Canal Fulton, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 30, 1977, Ser. No. 856,061
Int. Cl.[2] C07F *7/10, 7/18*
U.S. Cl. 260—42.15 **8 Claims**

1. A mercapto-substituted silane adhesion promoter for bonding mineral pigments to organic plastics, essentially free from the offensive odor of the unmodified mercapto compound, having the reactivity of the mercapto group reversibly blocked by presence of at least an equivalent quantity of a material capable of a simple addition reaction to the mercapto compound.

4,184,999

STABILIZED POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING HINDERED PHENOLS

Walter K. Olander, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jul. 19, 1978, Ser. No. 925,993
Int. Cl.[2] C08K *7/14;* **C08L** *53/02*
U.S. Cl. 260—42.18 **34 Claims**

17. A thermoplastic molding composition having improved impact strength and comprising in intimate admixture

(a) from about 20 to about 80 parts by weight of a polyphenylene ether resin prepared by use of a manganese bis(benzoin oxime) catalyst system;

(b) from about 20 to about 80 parts by weight of an alkenyl aromatic resin modified with rubbery diene polymer;

(c) from about 0.1 to about 5 parts by weight of a hindered phenol; and

(d) a reinforcing amount of an inorganic reinforcing filler.

20. The molding composition of claim 17 wherein the reinforcing filler comprises from about 10 to about 50% of fibrous glass filaments, based on the total weight of the composition.

4,185,000

METHOD OF PRODUCING POLYVINYLIDENE FLUORIDE COATINGS

Peter Gebauer; Wilhelm Klüfer, both of Troisdorf, and Helmut Möhrke, Troisdorf-Sieglar, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Dec. 1, 1976, Ser. No. 746,442
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554765
Int. Cl.[2] C08K *7/20*
U.S. Cl. 260—42.27 **7 Claims**

1. A powder coating composition consisting essentially of a homopolymer or copolymer of polyvinylidene fluoride having a melt flow index of 10 to 300 grams per ten minutes, determined in accordance with ASTM D 1238, Condition J and 5 to 50 weight percent of a glass in spherical form having a grain size of 1 to 300 μm, said polyvinylidene fluoride being in the form of particles.

4,185,001

PROCESS FOR PREPARING PLASTIC COMPOSITIONS CONTAINING A SILICATE DISPERSED THEREIN

Jean Machurat, Neuville sur Saone, and Georges Vrisakis, Collonges-au-Mont-D'Or, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 28, 1977, Ser. No. 855,077
Claims priority, application France, Nov. 29, 1976, 76 35883
Int. Cl.[2] C08K *3/10, 3/30*
U.S. Cl. 260—42.37 **22 Claims**

1. A process for preparing a polymeric composition comprising a polymeric material containing finely dispersed therein a water insoluble inorganic silicate comprising the steps of

(a) feeding a stream of an aqueous mixture containing a coagulable latex dispersion of a polymeric material and an aqueous solution of a water soluble alkali silicate into a reactor simultaneously with a separate stream of an aqueous solution containing at least one water soluble bivalent metal salt selected from the group consisting of chlorides and sulfates of a bivalent metal cation selected from the group of zinc, magnesium and calcium cation, to form a reaction slurry the pH of which is constantly maintained at such a value as is appropriate for precipitating a substantially neutral silicate of said bivalent metal by reaction of stoichiometrically equivalent amounts of the alkali silicate and the bivalent metal salt yet at which the precipitation of any hydroxy salt of the bivalent metal cation and of any alkali silicate is substantially prevented thereby maintaining a sufficiently elevated reaction temperature to effect the precipitation of the neutral bivalent metal silicate and the coagulation of the polymeric material to form a suspension of particles of said organic polymeric material having said bivalent metal silicate associated therewith, and

(b) recovering said particles from said suspension.

4,185,002

METHOD FOR MANUFACTURING FOUNDRY SAND CORES AND MOLDS

Masayuki Nakamura, and Setsuo Sanuki, both of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Oct. 30, 1975, Ser. No. 627,429
Claims priority, application Japan, Nov. 1, 1974, 49-125509
Int. Cl.[2] C08K *5/01, 5/05, 5/07, 5/10*
U.S. Cl. 260—42.54 **6 Claims**

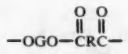
1. A self-cure process for manufacturing a foundry sand mold composition which comprises preforming a mixture containing an organic solvent and thereafter evaporating the solvent from the mixture to harden the resin and form the sand mold composition, said mixture consisting essentially of sand, a resin consisting essentially of a mixture of (1) a polyvinyl acetate resin selected from the group consisting of vinyl acetate homopolymers and copolymers of about 20 to 80 weight percent of vinyl acetate with hydrocarbon monomers of 2 to 8 carbon atoms containing a carbon to carbon double bond copolymerizable with said vinyl acetate, and (2) an adjuvant resin selected from the group consisting of an aromatic thermosetting resin selected from the group consisting of urea resins, melamine resins, ketone and furan resins, and an aromatic thermoplastic resin selected from the group consisting of cumaronediene resins, petroleum resins, terpene resins, epoxy resins, xylene resins, and polyester resins, the amount of resin mixture being about 0.5 to 3 weight percent based on the weight of sand, and an organic solvent for said resin mixture selected from the group consisting of methanol, ethanol, propanol, acetone, methyl ethyl ketone, diacetone alcohol, ethyl acetate, butyl acetate, toluene, xylene, and mixtures thereof, the amount of solvent being about 0.2 to 7 weight percent based on the weight of the sand.

4,185,003
STABILIZED COPOLYETHERESTERS

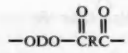
Guenther K. Hoeschele, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 16, 1978, Ser. No. 878,619
Int. Cl.[2] C08K 5/13, 5/34
U.S. Cl. 260—45.8 N 13 Claims

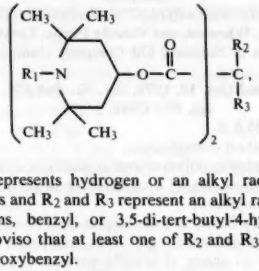
1. A copolyetherester composition stabilized against oxidative degradation due to exposure to heat and light, said composition consisting essentially of a copolyetherester consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head-to-tail through ester linkages, said long chain ester units being represented by the formula



and said short chain ester units being represented by the formula



where G is a divalent radical remaining after the removal of terminal hydroxyl groups from a poly(alkylene oxide)glycol having a number average molecular weight of about 400–6000 and a carbon to oxygen atomic ratio of about 2.5–4.3; R is a divalent radical remaining after removal of carboxyl groups from an aromatic dicarboxylic acid having a molecular weight less than about 300, and D is a divalent radical remaining after removal of hydroxyl groups from a diol having a molecular weight less than about 250; provided said short chain ester units amount to about 15–95 percent by weight of said copolyetherester and effective concentrations of a phenolic antioxidant and a hindered amine photostabilizer of the formula



where R_1 represents hydrogen or an alkyl radical of 1–12 carbon atoms and R_2 and R_3 represent an alkyl radical of 1–12 carbon atoms, benzyl, or 3,5-di-tert-butyl-4-hydroxybenzyl with the proviso that at least one of R_2 and R_3 is 3,5-di-tert-butyl-4-hydroxybenzyl.

4,185,004
MULTI-COMPONENT STABILIZING SYSTEM FOR PIGMENTED POLYOLEFINS

Ronald D. Mathis, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 27, 1977, Ser. No. 791,442
Int. Cl.[2] C08K 5/34, 5/36, 5/49, 5/52
U.S. Cl. 260—45.8 NT 12 Claims

1. A multi-component ultraviolet stabilizer system for pigmented polyolefin comprising a tris-(4-hydroxybenzyl) isocyanurate, a substituted pentaerythritol diphosphite, a trihydrocarbyl thiophosphite, and a thiomethylenephenol.

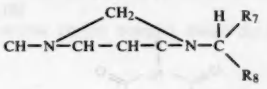
7. A stabilized, pigmented pololefin composition comprising a stabilizing amount of the multi-component stabilizing system of claim 1.

4,185,005
POLYMER COMPOSITIONS CONTAINING AS ANTIOXIDANTS SUBSTITUTED HEXAHYDROPYRIMIDINES

Neil E. S. Thompson, Creve Coeur, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 815,886, Jul. 15, 1977, Pat. No. 4,129,597.
This application Jun. 16, 1978, Ser. No. 916,038
Int. Cl.[2] C08K 5/34
U.S. Cl. 260—45.8 N 11 Claims

1. An unsaturated polymer composition containing antioxidant amounts of a compound of the formula



where the

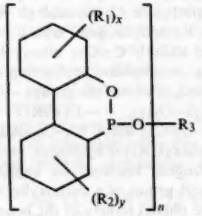
moiety is the residue of an aldehyde or ketone in which the two unsatisfied valences attached to the indicated carbon of said moiety are attached to the same oxygen atom and R_7 and R_8 together with the carbon to which they are joined may form a cyclohexane or cyclopentane ring or alkyl substituted derivative thereof and together with the carbon or carbon atoms to which it is shown attached indicates a cyclopentyl or cyclohexyl cycloalkyl ring or such a cycloalkyl ring substituted by alkyl, halo, alkoxy, or phenyl.

4,185,006
CYCLIC PHOSPHONITE STABILIZERS

Michael Rasberger, Riehen, Switzerland, and John D. Spivack, Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 6, 1978, Ser. No. 922,394
Int. Cl.[2] C07F 9/48, 9/65; C08K 5/53
U.S. Cl. 260—45.8 N 9 Claims

1. New phosphonites of the formula I



(I)

wherein

R_1 and R_2 independently of one another are a hydrocarbon radical, or halogen,

x and y independently of one another are 0, 1, 2 or 3,

n is 2, 3, 4, 5 or 6, and

R_3 is a n-valent aliphatic, alicyclic, aromatic, araliphatic each optionally containing N, O, or S atoms or heterocyclic hydrocarbon residue.

7. A composition stabilized against oxygen, light and heat comprising an organic material containing from 0.005 to 5% of a phosphonite according to claim 1.

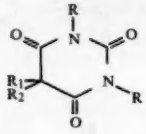
4,185,007

BARBITURIC ACID DERIVATIVES CONTAINING A PHENOLIC MOIETY AND/OR A HINDERED AMINE MOIETY

Michael Rasberger, Riehen, and Friedrich Karrer, Zofingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

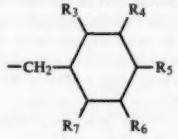
Filed Jun. 24, 1977, Ser. No. 809,577
Claims priority, application Switzerland, Jul. 8, 1976, 8775/76
Int. Cl.[2] C07D *401/04, 401/14;* **C08K** *5/34*
U.S. Cl. 260—45.8 N **10 Claims**

1. A compound of the formula I



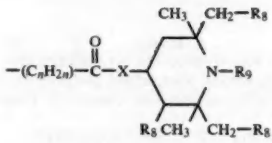
(I)

in which R is hydrogen or one of the groups



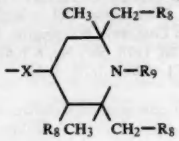
(II)

or



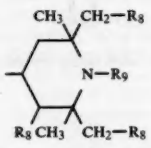
(III)

or an addition salt of formula III, wherein one of R_3 and R_5 is —OH and the other is hydrogen, R_4 denotes C_1–C_{12} alkyl, C_5–C_7 cycloalkyl, phenyl, α-naphthyl, β-naphthyl or C_7–C_9 aralkyl, R_6 and R_7 are hydrogen, C_1–C_{12} alkyl, C_5–C_7 cycloalkyl, phenyl, α-naphthyl, β-naphthyl or C_7–C_9 aralkyl, R_8 is hydrogen or C_1–C_8 alkyl and R_9 is hydrogen, oxyl, C_1–C_{12} alkyl, C_3–C_6 alkenyl, C_3–C_4 alkinyl, C_2–C_{21} alkoxyalkyl, C_7–C_8 aralkyl, 2,3-epoxypropyl, an aliphatic acyl group of a carboxylic acid with 1–4 C. atoms, or one of the groups —CH_2COOR_{10}, —CH_2—$CH(R_{11})$—OR_{12}, —$COOR_{13}$ or —$CONHR_{13}$, wherein R_{10} is C_1–C_{14} alkyl, C_3–C_6 alkenyl, phenyl, C_7–C_8 aralkyl or cyclohexyl, R_{11} is hydrogen, methyl or phenyl, R_{12} denotes hydrogen, benzoyl, an aliphatic, phenylaliphatifc or alicyclic acyl group of a carboxylic acid with 1–18 C atoms, wherein the phenyl moiety of the benzoyl and phenylaliphatic acyl groups can optionally be substituted by one or two chlorine atoms, one or two C_1–C_4 alkyl groups or one C_1–C_8 alkoxy group, and/or substituted by one hydroxyl group, and R_{13} denotes C_1–C_{12} alkyl, cyclohexyl, phenyl or benzyl, X is —O—or —NR_{14}— wherein R_{14} denotes hydrogen or C_1–C_{12} alkyl, and n denotes 1 to 5, and, if R is hydrogen or a group of formula II, R_1 denotes hydrogen, C_1–C_{18} alkyl, C_5–C_7 cycloalkyl, a group of the formula II or a group of the formula R_{15}—CO—(C_nH_{2n})— (IV) wherein n has the meaning defined above and R_{15} denotes C_1–C_{18} alkyl, C_5–C_7 cycloalkyl, C_1–C_{18} alkoxy, C_5–C_7 cycloalkoxy, C_7–C_9 aralkyl or a group of the formula



(V)

or an addition salt of formula V, wherein X, R_8 and R_9 have the meaning defined above, and, if R is a group of the formula III, R_1 denotes hydrogen or a group of the formula II, and, if R is hydrogen or a group of the formula II, R_2 denotes a group of the formula III or VI



(VI)

wherein R_8 and R_9 have the meaning defined above, and, if R is a group of the formula III, R_2 denotes hydrogen, C_1–C_{18} alkyl, C_5–C_7 cycloalkyl, phenyl, α-naphthyl, β-naphthyl, C_7–C_9 aralkyl or one of the groups II, III or V,

with the proviso that said compound of formula I contains at least one phenolic moiety of the formula II and at least one hindered amine moiety selected from the group consisting of formula III, and addition salt of formula III, formula V, an addition salt of formula V, and formula VI.

6. A composition comprising a plastic and a compound of the formula I according to claim 1, in an amount which is effective to stabilize said plastic against degradation by oxygen, heat or light.

4,185,008

FLAME RETARDANT COMPOSITIONS

Gunter Caspari, Wheaton, and Wassily Poppe, Lombard, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 10, 1978, Ser. No. 949,654
Int. Cl.[2] C08K *5/32*
U.S. Cl. 260—45.8 A **11 Claims**

1. A composition comprising:

(a) a thermoplastic polymer and at least one primary flame retardant consisting of a chlorine or bromine containing organic compound;

(b) a secondary flame retardant agent in an amount sufficient to give an improved oxygen index, said agent comprising: about 0.05 to about 15 weight percent of one or more nitrate containing compounds selected from the group consisting of sodium nitrate, ammonium nitrate, metal ammine nitrates and guanidine nitrates.

4,185,009

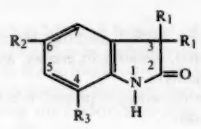
BRANCHED, HIGH-MOLECULAR WEIGHT THERMOPLASTIC POLYCARBONATES

Karsten-Josef Idel; Dieter Frietag, and Werner Nouvertne, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 644,253, Dec. 24, 1975, abandoned. This application Oct. 26, 1977, Ser. No. 845,689
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1975, 2500092
Int. Cl.[2] C08G *63/62;* **C09K** *3/28*
U.S. Cl. 260—45.9 R **24 Claims**

1. A process for the preparation of a thermoplastic, branched-chain, high molecular weight, soluble polycarbonate

comprising condensing a difunctional aromatic halogen-free or halogen-containing dihydroxy compound or a mixture thereof in the presence of from about 0.05 to 2 mol % of a branching agent and from about 0.1 to 8.0 mol % of a monofunctional aromatic hydroxy compound, in each case relative to the mols (100 mol %) of the difunctional aromatic dihydroxy compound, with phosgene, a bis-chlorocarbonic acid ester or another compound which forms carbonate groups, in solution or by means of a phase boundary reaction, at a temperatre of from about 20° to 80° C., or with a carbonic acid diaryl ester in the melt at a temperature of from about 150° to 300° C., the said branching agent being a 3,3-bis-(4-hydroxyaryl)-oxindole of the formula (I):



(I)

wherein

R_1 denotes a 4-hydroxyaryl radical and

R_2 and R_3 can be identical or different and denote hydrogen or halogen atoms.

12. A thermoplastic branched-chain, high molecular weight, soluble polycarbonate prepared by the process of claim **1**.

4,185,010

NONAPEPTIDES

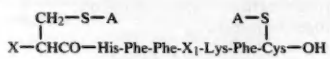
Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Dec. 12, 1978, Ser. No. 968,708

Int. Cl.[2] **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 S **4 Claims**

1. A common of the formula:



in which

the A groups are hydrogen or a direct bond between the two sulfur atoms;

X is hydrogen or Nh_2;

X_1 is L-Trp or D-Trp;

X_2 is L-Abu, L-Val, L-Phe or L-Thr;

and the two cysteinyl moieties are of L- or D-configuration, the linear precursor intermediates or pharmaceutically acceptable salts thereof.

4,185,011

PROCESS FOR THE PRODUCTION OF COLLAGEN FIBERS

Zdeněk Eckmayer, Heidelberg; Alexander Berg, Hirschberg, and Joachim Kühn, Weinheim, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinstein, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,944

Int. Cl.[2] **C07G** *7/00*

U.S. Cl. 260—123.7 **8 Claims**

1. A process for the preparation of collagen fibers, especially suited for medicinal use, comprising subjecting animal skin, hide or tendons to digestion with a strong alkali until the material has an amide nitrogen content of approximately 0.20 to 0.40 mole per gram, swelling the mass by thorough intermixing with acid, mechanically separating collagen fibers from the mass, de-swelling the collagen fibers with salts or organic solvents, and dehydrating the collagen fibers to approximately 20 to 40 weight % moisture based on the dry weight of the fibers.

4,185,012

WATER-SOLUBLE, FIBRE-REACTIVE COPPER COMPLEX DISAZO DYESTUFFS

Fritz Meininger, and Hartmut Springer, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

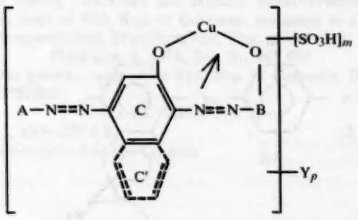
Continuation-in-part of Ser. No. 516,093, Oct. 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 182,884, Sep. 22, 1971, abandoned. This application Aug. 30, 1976, Ser. No. 718,835

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1970, 2047025

Int. Cl.[2] **C09B** *45/26, 45/28, 45/30, 45/36*

U.S. Cl. 260—148 **6 Claims**

1. A water-soluble copper complex disazo dyestuff of the formula



wherein A is phenyl, phenyl substituted by methoxy or carboxy or naphthyl, C is phenylene, phenylene substituted by methoxy or phenylene substituted by lower alkyl, C and C' together are naphthylene, B is naphthylene or naphthalene substituted by amino, acetylamino or benzoylamino, m is 1, 2, 3, 4, 5 or 6, Y is $—SO_2—CH=CH_2$, $—NH—SO_2CH=CH_2$ or $—SO_2—CH_2—CH_2—Z$ wherein Z is hydroxy, methylsulfonyloxy, p-tolysulfonyloxy, acetoxy, dimethylamino, diethylamino, thiosulfato, phosphato or sulfato and P is 1 or 2, or 1 or 2 or 3 where Y is β-hydroxy-ethyl-sulfone sulfuric acid ester.

4,185,013

ANIONIC AZO DYES HAVING A 3-DIBENZOFURANYL DIAZO COMPONENT RADICAL OPTIONALLY HAVING A 2- OR 8-SULFO GROUP

Francois Benguerel, Binningen, and Jean-Jacques Salzmann, Aesch, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

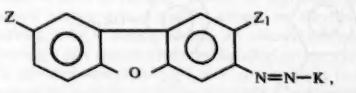
Continuation-in-part of Ser. No. 572,765, Apr. 29, 1975, Pat. No. 4,081,438. This application Nov. 8, 1976, Ser. No. 739,493

Claims priority, application Switzerland, May 4, 1974, 6050/74

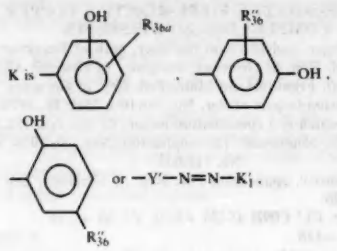
Int. Cl.[2] **C09B** *29/12, 35/38, 35/40, 35/42*

U.S. Cl. 260—152 **24 Claims**

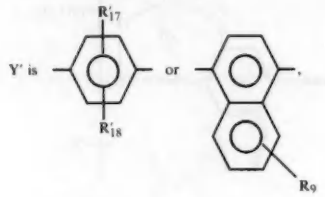
1. A compound of the formula



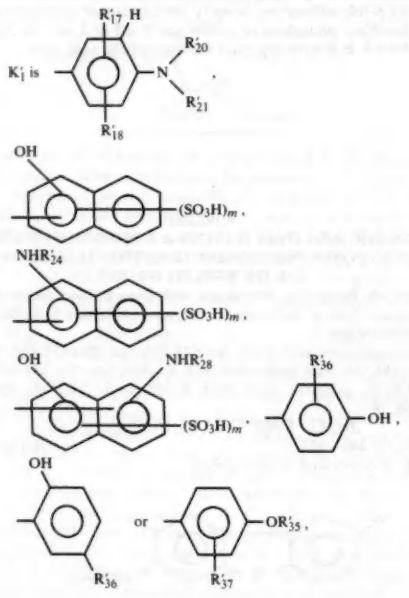
or a salt thereof each cation of which is non-chromophoric, wherein each of Z and Z_1 is independently hydrogen or sulfo, with the proviso that at least one of Z and Z_1 is hydrogen, and



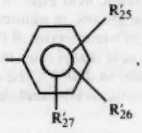
wherein
R_{36}'' is methoxy or ethoxy,
R_{36a} is C_{1-8}alkyl,



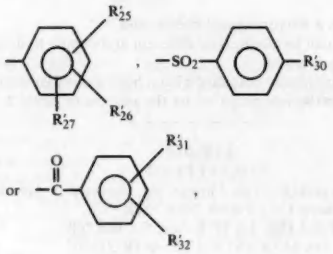
wherein
R_9 is hydrogen or sulfo, with the proviso that when R_9 is sulfo it is in the 6-, 7-or 8- position relative to the —N=N—K_1' group,
R_{17}' is hydrogen, chloro, methyl, methoxy or ethoxy, and
R_{18}' is hydrogen, methyl, methoxy or ethoxy, and



wherein
R_{17}' is hydrogen, chloro, methyl, methoxy or ethoxy,
R_{18}' is hydrogen, methyl, methoxy or ethoxy,
R_{20}' is hydrogen, methyl, ethyl, propyl, butyl, 2-chloroethyl, 2-cyanoethyl, 2-hydroxyethyl, benzyl, sulfobenzyl or phenyl,
R_{21}' is hydrogen, methyl, ethyl, propyl, butyl, 2-chloroethyl, 2-cyanoethyl or 2-hydroxyethyl,
R_{24}' is hydrogen or



wherein
R_{25}' is hydrogen, chloro, methyl, methoxy, ethoxy or sulfo,
R_{26}' is hydrogen, methyl, methoxy or ethoxy, and
R_{27}' is hydrogen or methyl,
R_{28}' is hydrogen, methyl, ethyl, n-propyl, n-butyl, acetyl, propionyl, benzoyloxy,



wherein
R_{25}' is hydrogen, chloro, methyl, methoxy, ethoxy or sulfo,
R_{26}' is hydrogen, methyl, methoxy or ethoxy,
R_{27}' is hydrogen or methyl,
R_{30}' is hydrogen or methyl,
R_{31}' is hydrogen, methyl or methoxy, and
R_{32}' is hydrogen or methyl,
R_{35}' is methyl, ethyl, propyl, phenylsulfonyl or p-tolylsulfonyl,
R_{36}' is methyl, ethyl, t-butyl, methoxy or ethoxy,
R_{37}' is hydrogen, methyl, ethyl, methoxy or ethoxy, and
m is 0, 1 or 2, with the proviso that the molecule contains 1 or 2 sulfo groups.

4,185,014

KENTENIMINE INTERMEDIATES FOR 6α-METHOXY-α-CARBOXY PENICILLINS

Andrew W. Taylor, Dorking; George Burton, Sutton, and John P. Clayton, Horsham, all of England, assignors to Beecham Group Limited, England

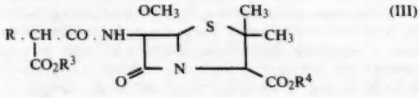
Division of Ser. No. 808,825, Jun. 22, 1977. This application Jun. 7, 1978, Ser. No. 913,344

Claims priority, application United Kingdom, Jun. 26, 1976, 26720/76

Int. Cl.[2] **C07D** *501/04*

U.S. Cl. 260—239.1 **13 Claims**

1. A process for the preparation of a compound of formula (III):



wherein

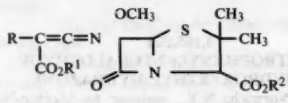
R is 2-thienyl, 3-thienyl, phenyl or 4-hydroxyphenyl;

R^3 is hydrogen, a pharmaceutically acceptable salt-forming ion or non-alkyl ester forming radical; and

R^4 is hydrogen, a pharmaceutically acceptable salt-forming ion or an in vivo hydrolysable ester-forming radical;

which process comprises:

(i) hydrolysing a 6α-methoxy ketenimine of formula (V):



(V)

wherein R is 2-thienyl, 3-thienyl, phenyl or 4-hydroxyphenyl and CO_2R^1 is an esterified α- carboxy group except that R^1 is not an alkyl ester-forming group and CO_2R^2 is an in vivo hydrolysable esterified 3-carboxy group;

(ii) removing any carboxyl-blocking groups which may be present; and

(iii) optionally salifying or esterifying any free carboxylic acid group.

4,185,015

METHOXYMETHYL 6-[D-2,2-DIMETHYL-4-(4-HYDROXYPHENYL)-5-OXO-1-IMIDAZOLYL]PENICILLANATE

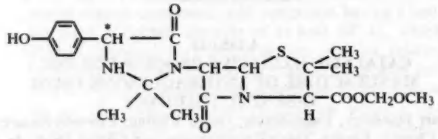
Paul D. Sleezer, Dewitt, and David A. Johnson, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 744,572, Nov. 24, 1976, abandoned, which is a continuation of Ser. No. 549,109, Feb. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 341,196, Mar. 24, 1973, abandoned. This application Oct. 3, 1977, Ser. No. 838,618

Int. Cl.² C07D *499/80*

U.S. Cl. 260—239.1 **2 Claims**

1. The compound of the structure



having the D-configuration at the carbon atom marked with an asterisk.

4,185,016

PYRROLO BENZODIAZEPINE COMPOUNDS

Atuyuki Takanabe; Yoshio Arakawa, both of Hirakata; Yoshio Kagitani, Kashihara; Yasuo Ueda, Hirakata; Daisuke Satoh, Tokushima, and Nobuhiko Komatsu, Tokyo, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

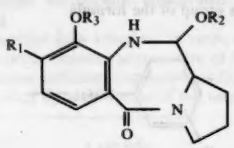
Filed Oct. 2, 1978, Ser. No. 947,418

Claims priority, application Japan, Dec. 27, 1977, 52/156684

Int. Cl.² C07D *487/04*

U.S. Cl. 260—239.3 T **20 Claims**

1. A compound represented by the following formula:



wherein R_1 represents hydrogen atom, methyl group, hydroxy group or methoxy group; R_2 represents hydrogen atom, methyl group, ethyl group or phenyl-(lower alkyl) group; and R_3 represents hydrogen atom or acetyl group.

4,185,017

N-SUBSTITUTED ε-CAPROLACTAMS

Steffen Piesch, Oberursel, and Herbert Wille, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

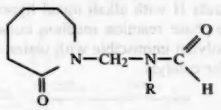
Filed Dec. 8, 1978, Ser. No. 967,593

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755588

Int. Cl.² C07D *223/10*

U.S. Cl. 260—239.3 R **5 Claims**

1. A compound of the formula



wherein

R is hydrogen or —CH_2OH.

4,185,018

PROCESS FOR PRODUCING BENZOFURAZAN-1-OXIDES

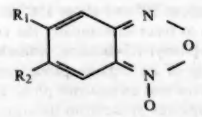
Hansjakob Fah, Ettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,282

Int. Cl.² C07D *271/12*

U.S. Cl. 548—126 **11 Claims**

1. A process for producing benzofurazan-1-oxides of the formula I

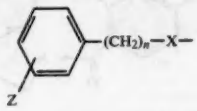


(I)

in which

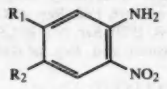
R_1 and R_2 independently of one another each represent hydrogen, halogen, an alkyl group which has 1 to 4 carbon atoms and which can be substituted by halogen, hydroxyl, amino, alkylamino having 1 to 4 carbon atoms in the alkyl group and dialkylamino having 1 to 4 carbon atoms in each of the alkyl groups, or represents an alkoxy group having 1 to 4 carbon atoms, an alkylthio group having 1 to 4 carbon atoms, an alkoxycarbonyl group having 1 to 4 carbon atoms in the alkyl group, carbamoyl, N-alkylcarbamoyl having 1 to 4 carbon atoms in the alkyl group, N,N-dialkylcarbamoyl having 1 to 4 carbon atoms in each of the alkyl groups, sulfamoyl, N-alkylsulfamoyl having 1 to 4 carbon atoms in the alkyl group, N,N-dialkylsulfamoyl having 1 to 4 carbon atoms in each of the alkyl groups, a carboxyl group or a cyano group, and

either the radical R_1 or the radical R_2 can additionally represent a group of the formula



wherein Z represents hydrogen, halogen, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, an alkylthio group having 1 to 4 carbon atoms or a trifluoromethyl group, n represents 0, 1 or 2, and X represents oxygen, sulfur, a sulfinyl group or a sulfonyl group,

by reaction of 2-nitroanilines of the formula II



(II),

in which R_1 and R_2 have the meanings given under the formula I, with alkali metal hypochlorite, in the presence of an alkali metal hydroxide, in which process the reaction of 2-nitroanilines of the formula II with alkali metal hypochlorite is performed in a two-phase reaction medium consisting of water and an organic solvent immiscible with water, in the presence of a phase-transfer catalyst.

4,185,019

PROCESS FOR PREPARING 4-PHENYL-1,3-DIOXANE

James M. Watson, 2100 Settles St., and Alan Chepregi, 1425 E. 6th St., both of Big Spring, Tex. 79720

Filed Sep. 5, 1978, Ser. No. 939,348

Int. Cl.[2] C07D *319/04*

U.S. Cl. 260—340.7 **14 Claims**

1. A process for preparing 4-phenyl-1,3-dioxane, consisting essentially of the steps of:

(a) subjecting a mixture comprising 1 part by mole of styrene a polymerization inhibitor and such an amount of an aqueous formaldehyde solution, having a formaldehyde concentration of between about 30 and about 37%, which contains from about 2 to about 2.5 parts by mole of formaldehyde in the presence of an acidic catalyst, to a temperature of between about 80° and about 150° C. for a period of time sufficient to react substantially the entire amount of styrene into 4-phenyl-1,3-dioxane, whereby a reaction mixture consisting of an organic phase comprising the 4-phenyl-1,3-dioxane and an aqueous phase is obtained;

(b) separating the aqueous phase from the organic phase;

(c) washing the organic phase with an aqueous alkaline solution to obtain a crude 4-phenyl-1,3-dioxane-containing product; and

(d) recovering the 4-phenyl-1,3-dioxane from the crude product.

4,185,020

5-(4-NITROPHENYL)-2-FURANMETHANAMINES DERIVATIVES

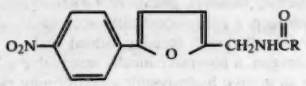
Ralph L. White, Jr., and Chia-Nien Yu, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Feb. 7, 1979, Ser. No. 10,175

Int. Cl.[2] C07D *307/54*

U.S. Cl. 260—347.3 **4 Claims**

1. A compound of the formula:



wherein R is ethoxy, methyl or amino.

4,185,021

5-(P-NITROPHENYL)-2-FURALDEHYDE 2-(2-HYDROXYETHYL)HYDRAZONE

Chia-Nien Yu, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,208

Int. Cl.[2] C07D *307/52*

U.S. Cl. 260—347.7 **1 Claim**

1. The compound 5-(p-nitrophenyl)-2-furaldehyde 2-(2-hydroxyethyl)-hydrazone.

4,185,022

FURFURYL ALCOHOL PRODUCTION PROCESS

Allen A. Kozinski, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jul. 25, 1977, Ser. No. 818,440

Int. Cl.[2] C07F *307/44*

U.S. Cl. 260—347.8 **3 Claims**

1. A process for producing relatively pure furfuryl alcohol directly from furfural which comprises passing furfural in the vapor phase in the presence of hydrogen at a temperature between 120°–160° C. over a catalyst consisting essentially of a neutral or alkaline inorganic carrier having high surface area of at least 60 square meters per gram prior to deposition of copper-sodium silicate components thereon, and containing a copper-sodium silicate deposited therewith, the amount of silicate in the copper-sodium silicate constituting between about 5 and 20 percent on a dry weight basis, the amount of copper in the overall catalyst mixture consisting of at least 8 percent by weight thereof, but not more than 25 percent, when reduced.

4,185,023

CATALYTIC OXIDATIVE PROCESS FOR THE MANUFACTURE OF ANTHRAQUINONE FROM O-BENZYL TOLUENE

Kurt Handrick, Essen-Steele; Georg Kölling, Essen-Bredeney; Clemens Linden, Essen-Bergerhausen, and Günter Droll, Jr., Moers, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,387

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804417

Int. Cl.[2] C07C *49/68;* **C09B** *1/00*

U.S. Cl. 260—369 **6 Claims**

1. A process for the manufacture of anthraquinone, comprising oxidizing o-benzyl-toluene with air or an oxygen-containing gas in an acetic acid solution containing cobalt, manganese and bromine salts to which sufficient acetic anhydride is added to bind all water produced during said oxidation, at a temperature between about 100° and 150° C. and at atmospheric or elevated pressure, to produce crude o-benzoyl-benzoic acid; esterifying said crude o-benzoyl-benzoic acid to produce a corresponding methyl ester; distilling said methyl ester from the reaction mixture; and heating said methyl ester with concentrated sulfuric acid at a temperature of about 150° C. to yield anthraquinone.

4,185,024

NITRIC ACID PROCESS FOR THE MANUFACTURE OF ANTHRAQUINONE FROM O-BENZYL-TOLUENE

Kurt Handrick, Essen-Steele; Georg Kölling, Essen-Bredeney, and Clemens Linden, Essen-Bergerhausen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,388

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804417

Int. Cl.[2] C07C *49/68;* C09B *1/00*

U.S. Cl. 260—369 5 Claims

1. A process for the production of anthraquinone, comprising oxidizing o-benzyl-toluene with 25 to 50 weight-% nitric acid in the presence of known oxidation catalysts at atmospheric pressure and a temperature between about 80° and 110° C. until evolution of nitrogen oxides ceases; further oxidizing the product of said first oxidation step with 8 to 15 weight-% nitric acid under a pressure of between about 10 to 30 bar and a temperature between about 150° and 180° C. until evolution of nitrogen oxides ceases, to yield crude o-benzoyl-benzoic acid; esterifying said crude o-benzoyl-benzoic acid with methanol, to yield a corresponding methyl ester; distilling said methyl ester from the reaction mixture; and heating said methyl ester with concentrated sulfuric acid at a temperature of about 150° to yield anthraquinone.

4,185,025

CONTINUOUS PROCESS FOR OZONIZING UNSATURATED COMPOUNDS

Franz-Josef Carduck, Haan; Axel Dräger, Düsseldorf; Gunter Effey, Monheim; Suresh Majmudar, Haan, and Martin Witthaus, Dusseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 888,528, Mar. 21, 1978, abandoned. This application Dec. 6, 1978, Ser. No. 966,948

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754366

Int. Cl.[2] C09F *7/02;* C11C *3/00*

U.S. Cl. 260—406 11 Claims

1. A continuous process for the ozonization of a higher molecular weight olefinically unsaturated organic compound, which consists essentially of the steps of:

(a) continuously feeding a fresh charge mixture of the unsaturated organic compound, said compound having a boiling point at normal pressure of at least 50° C., which mixture contains 2 to 49 weight percent of water, relative to the weight of said unsaturated organic compound, into parallel flow in a confined space with the ozone-containing off gas from a previous ozonization wherein said unsaturated organic compound and said ozone-containing off gas are intimately mixed continuously throughout their parallel flow together and wherein the partially ozonized charge produced is optionally similarly reacted with a further charge of ozone-containing gas in one or more additional parallel flow reactions,

(b) continuously withdrawing from step (a) a partially ozonized charge and gas substantially free of ozone,

(c) continuously feeding said partially ozonized charge containing water from step (b) into parallel flow in a confined space with ozone-containing gas and intimately mixing said partially ozonized charge and said ozone-containing gas continuously throughout their parallel flow together,

(d) continuously passing ozone-containing gas containing 0.1 to 1 volume percent ozone into step (c),

(e) continuously withdrawing the ozonized charge containing none-to-sufficient water for hydrolysis of the ozonide and a partially depleted ozone-containing off gas,

(f) continuously separating said gas, and cycling it to step (a), and

(g) continuously recovering an ozonide of said higher molecular weight olefinically unsaturated organic compound, and

wherein said parallel flow reactions in steps (a) and (c) are conducted at a predetermined temperature of from 10° to 50° C. and at a pressure sufficient that substantially all the heat of reaction is removed by evaporation of the water present.

4,185,026

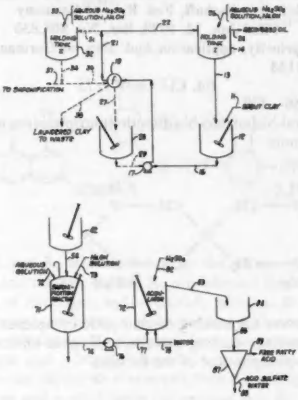
PROCESS FOR CLEANSING SPENT CLAY FROM THE REFINING OF GLYCERIDE ESTERS

Gary W. Smith, Lynn Haven; Dwight E. Leavens, Panama City, and Louis R. Sims, Pensacola, all of Fla., assignors to Sylvachem Corporation, Jacksonville, Fla.

Continuation-in-part of Ser. No. 661,257, Feb. 25, 1976, Pat. No. 4,049,685. This application Sep. 20, 1977, Ser. No. 834,965

Int. Cl.[2] C11B *13/04*

U.S. Cl. 260—412.5 8 Claims



1. An elevated temperature process for deoiling spent crystalline clay from the refining of glyceride oils which comprises:

forming a primary dispersion of said spent clay with a first body of aqueous alkali at elevated temperature, thereby forming primary treated clay,

the primary dispersing being done under conditions that are effective for removing a substantial amount of oily phase from said spent clay as glyceride esters;

separating said primary treated clay from said primary dispersion;

forming a secondary dispersion of said primary treated clay with a second body of aqueous alkali at elevated temperature, thereby forming a secondary treated clay,

the secondary dispersing being under conditions that are effective for saponifying at least a major fraction of the glyceride esters present in said secondary dispersion;

separating said secondary treated clay from said secondary dispersion prior to acidulating same for recovery of fatty acids in a latter step of the process;

acidulating remaining aqueous phase from said secondary dispersion to spring free fatty acids therein; and recovering the resulting free fatty acids.

4,185,027

HYDROLYSIS OF METHYL ESTERS

Ted J. Logan, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 15, 1978, Ser. No. 915,855

Int. Cl.[2] C11C *1/04, 1/00*

U.S. Cl. 260—415 17 Claims

1. A process for hydrolyzing methyl ester having a carbox-

ylic acid moiety containing from 6 to 22 carbon atoms, said process comprising

(a) reacting said ester with water in the presence of catalyst consisting essentially of carboxylic acid catalyst and strong acid to produce carboxylic acid corresponding to said ester and methanol; said water being utilized in an amount such that the molar ratio of water to methyl ester is at least about 1:1; said carboxylic acid catalyst being selected from the group consisting of propionic acid, butyric acid, valeric acid and mixtures thereof; and

(b) driving the reaction toward completion by removing methanol.

4,185,028

DOUBLE YLIDE COMPLEXES OF METALS AND PROCESS FOR MAKING THEM

Hubert Schmidbaur, Garching, and Hans-Jurgen Fuller, Unterpfaffenhofen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

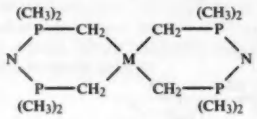
Filed Jan. 12, 1978, Ser. No. 868,830

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1977, 2701143

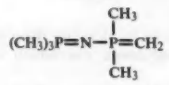
Int. Cl.[2] **C07F** *1/12*

U.S. Cl. 260—430 **8 Claims**

1. A metal-bis[nitrido-bis(dimethylphosphonium methylide)] of the formula



4. A process for making double ylide complexes of metals, which comprises reacting trimethyl-phosphin-imino-dimethyl-methylene-phosphorane of the formula



with at least one metal compound selected from $[(CH_3)_3P]_2MX_2$; MX_2; $[(CH_3)_3P]_2Ni(CH_3)X$; $[(CH_3)_3P]_2Ni(CH_3)_2$; $[(CH_3)_2AuX]_2$; LiR or $M'R_2$, in which M stands for nickel, palladium or platinum, X stands for chlorine, bromine or iodine, M' stands for magnesium and R stands for CH_3, C_2H_5, C_3H_7 or C_4H_9.

4,185,029

METHOD OF PREPARING ORTHOSILICIC ACID ALKYL ESTERS

Gerhard Kreuzburg, Niederkassel; Arnold Lenz, Cologne-Stammheim, and Walter Rogler, Bonn, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 706,864, Jul. 19, 1976, Pat. No. 4,113,761. This application Jan. 5, 1978, Ser. No. 867,212

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1975, 2532473; Jul. 19, 1975, 2532475; Jul. 19, 1975, 2532476

Int. Cl.[2] **C07F** *7/04*

U.S. Cl. 260—448.8 A **5 Claims**

1. A process for preparing an orthosilicic acid tetraalkyl ester having 2 to 6 C atoms in the ester group which comprises contacting metallic silicon with an alcohol corresponding to the ester group in the presence of the corresponding alkali alcoholate and orthosilicic acid tetraalkyl ester having 2 to 6 carbon atoms in the ester group under pressure and in the liquid phase at a temperature above the boiling point of the reaction mixture.

4,185,030

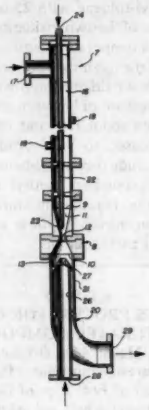
SULFONATING METHOD

Burton Brooks, Bellevue, and Richard J. Brooks, Seattle, both of Wash., assignors to The Chemithon Corporation, Seattle, Wash.

Continuation of Ser. No. 690,652, May 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 393,192, Aug. 30, 1973, abandoned. This application Nov. 10, 1977, Ser. No. 850,350

Int. Cl.[2] **C07C** *130/00;* **C07B** *13/02*

U.S. Cl. 260—458 R **33 Claims**



1. A continuous process for reacting a gaseous sulfonating agent comprising sulfur trioxide with a sulfonatable liquid organic reactant to produce a reaction product, said process comprising the steps of:

introducing said liquid organic reactant into a stream of said gaseous sulfonating agent;

atomizing said liquid organic reactant to form a mist of organic reactant particles;

reacting said mist of organic reactant particles and said gaseous sulfonating agent in a temperature-increasing exothermic reaction to form a reaction mixture comprising unreacted sulfur trioxide and particles of said reaction product and of unreacted organic reactant;

contacting said reaction mixture with a continually renewed, moving stream of cooling liquid comprising cooled, recycled reaction product, to cool the reaction mixture, no later than immediately after said reacting step, to a temperature which is substantially below that otherwise resulting from said reacting step but at which further reaction can occur;

initiating said contacting step downstream of the location where said liquid organic reactant is introduced into said stream of gaseous sulfonating agent and before said reaction is complete;

flowing a pair of closely spaced films of said cooling liquid downstream from the location of initial contact between the reaction mixture and the cooling liquid;

flowing said reaction mixture concurrently with, and between, said closely spaced films of cooling liquid;

agglomerating said particles of reaction mixture into said films during said concurrent flow;

and reacting unreacted organic reactant with the unreacted sulfur trioxide in said reaction mixture, during said concurrent flow, to provide said further reaction.

4,185,031
FLUORINATED PHOSPHINIC ACIDS

Hyman D. Gillman, East Vincent Township, Chester County, and James P. King, Upper Gwynedd Township, Montgomery County, both of Pa., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 27, 1978, Ser. No. 946,265
Int. Cl.[2] C07F 9/30; C10M 1/44
U.S. Cl. 260—502.4 R 4 Claims

1. A fluorinated phosphinic acid having the following formula:

$$R(R_fCH_2CH_2)P(O)OH,$$

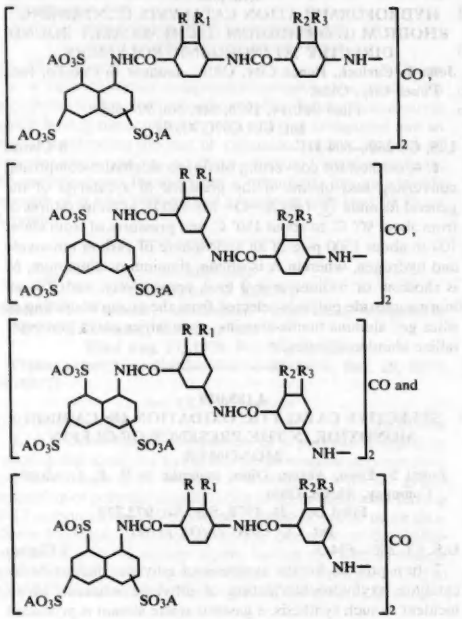
wherein R is alkyl or aryl and R_f is perfluoroalkyl.

4,185,032
UREYLENE PHENYLENE ANIONIC NAPHTHALENESULFONIC ACIDS

Gerald J. Siuta, Yonkers; Ransom B. Conrow, Pearl River; John F. Poletto, Nanuet, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 11, 1978, Ser. No. 923,744
Int. Cl.[2] C07C 143/30; A61K 31/185
U.S. Cl. 260—506 10 Claims

1. A compound of the formulae:



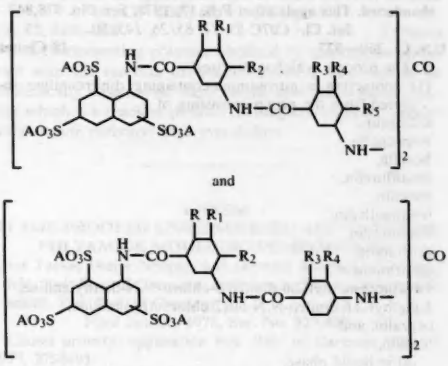
wherein R and R_2 are selected from the group consisting of hydrogen and —SO_3A wherein A is a pharmaceutically acceptable salt cation; R_1 and R_3 are selected from the group consisting of hydrogen and —COOB, wherein B is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; with the proviso that R, R_1, R_2 and R_3 may not all be hydrogen; and with the second proviso that when R is —SO_3A, R_1 may not be —COOB and when R_2 is —SO_3A, R_3 may not be —COOB.

4,185,033
UREYLENE PHENYLENE ANIONIC NAPHTHALENESULFONIC ACIDS

Gerald J. Siuta, Yonkers; Ransom B. Conrow, Pearl River; John F. Poletto, Nanuet, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 11, 1978, Ser. No. 923,745
Int. Cl.[2] C07C 143/30; A61K 31/185
U.S. Cl. 260—506 11 Claims

1. A compound of the formulae:



and

wherein R and R_2 are selected from the group consisting of hydrogen and methyl; R_1 and R_4 are selected from the group consisting of hydrogen and —COOB, wherein B is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; R_3 is selected from the group consisting of hydrogen and —SO_3A, wherein A is a pharmaceutically acceptable salt cation; R_5 is selected from the group consisting of hydrogen and methyl; with the proviso that R_1, R_3 and R_4 may not all be hydrogen; with the second proviso that R_2 and R_5 may not both be hydrogen and when R_5 is not present, R_2 must be methyl; and with the third proviso that when R_3 is —SO_3A, R_4 may not be —COOB.

4,185,034
BLEACHING OLEFIN SULFONATES WITH PHOSPHATE AND PEROXIDE

Kazuo Yamamoto, Kodaira; Shizuo Sekiguchi, Yokohama, and Yozo Miyawaki, Chiba, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 686,382, May 14, 1976, abandoned.
This application May 8, 1978, Ser. No. 903,396
Claims priority, application Japan, May 23, 1975, 50-62390
Int. Cl.[2] C07C 143/02
U.S. Cl. 260—513 R 5 Claims

1. A process of bleaching water-soluble olefin sulfonates obtained by sulfonating olefins having from 12 to 22 carbon atoms, then neutralizing the sulfonation reaction product with caustic alkali and hydrolyzing, which consists essentially of: (1) adding to and dissolving thoroughly by mixing in an aqueous solution of said water-soluble olefin sulfonate, from 2 to 7 percent by weight, based on the weight of said olefin sulfonate, of a substance selected from the group consisting of sodium tripolyphosphate, potassium tripolyphosphate, sodium pyrophosphate, potassium pyrophosphate, sodium phosphate, potassium phosphate and mixtures thereof, the aqueous solution of said water-soluble olefin sulfonate and said substance having a pH of from 7 to 12 and being at a temperature in the range of from 30° to 130° C., (2) then adding to said aqueous solution of said water-soluble olefin sulfonate and said substance obtained in step (1), from more than 0.1 up to 10 percent by weight of

hydrogen peroxide, based on the weight of said olefin sulfonate, and (3) maintaining the mixture obtained in step (2) at a temperature in said range for a period of time effective to bleach said olefin sulfonate.

4,185,035

DINITROANILINE PURIFICATION WITH INORGANIC ACID HALIDES

Richard F. Eizember, Greenwood, and Kathleen R. Vogler, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 830,261, Sep. 2, 1977, abandoned. This application Feb. 17, 1978, Ser. No. 878,843

Int. Cl.[2] **C07C** *85/24, 85/26, 143/80*

U.S. Cl. 260—577 **18 Claims**

1. The process which comprises

(1) contacting a nitrosamine-containing dinitroaniline selected from the group consisting of

trifluralin,
isopropalin,
benefin,
ethalfluralin,
butralin,
tendimethalin,
fluchloralin,
profluralin,
dinitramine,
4-trifluoromethyl-2,6-dinitro-3-chloro-N,N-diethylaniline,
4-methyl-2,6-dinitro-N,N-bis(2-chloroethyl)aniline,
oryzalin, and
nitralin,

(a) in liquid phase,

(b) with a reagent selected from the group consisting of PCl_3, PCl_5, PBr_3, and $POCl_3$, until the concentration of the nitrosamine has been reduced, and

(2) thereafter recovering the dinitroaniline.

4,185,036

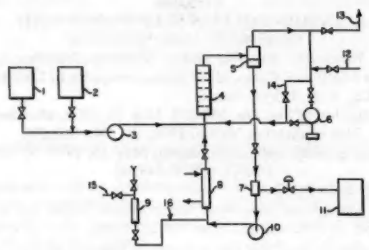
HYDROGENATION OF MIXED AROMATIC NITROBODIES

Karl F. Cossaboon, Fairville, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 429,196, Dec. 28, 1973, abandoned. This application Sep. 28, 1977, Ser. No. 837,633

Int. Cl.[2] **C07C** *85/11*

U.S. Cl. 260—580 **14 Claims**



1. Process for catalytically hydrogenating a mixture of aromatic compounds consisting of at least one mononitro-non-amino compound and at least one compound selected from dinitro and mononitromonoamino compounds in a reaction vessel to produce a mixture of separable corresponding aromatic amino compounds consisting of at least one monoamino compound and at least one diamino compound, which process comprises reacting hydrogen and a homogeneous or heterogeneous liquid mixture of at least 25 weight % of an aromatic mononitro-non-amino compound and at least 25 weight % of at least one compound selected from aromatic dinitro compounds and aromatic mononitromonoamino compounds, with vigorous mixing, in the presence of 0.05–1.0 weight % of a hydrogenation catalyst derived from a metal of Group VIII of the Periodic Chart of the Elements, at a temperature of 75°–225° C. and a pressure of 50–800 p.s.i.g.

4,185,037

PROCESS FOR THE MANUFACTURE OF PHOSPHORUS-CONTAINING CONDENSATION PRODUCTS, THE PRODUCTS AND THEIR USE AS FLAMEPROOFING AGENTS

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 848,050, Nov. 3, 1977, abandoned, which is a continuation of Ser. No. 584,808, Jun. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 285,171, Aug. 31, 1972, abandoned. This application Nov. 24, 1978, Ser. No. 963,500

Int. Cl.[2] **C07C** *87/20, 87/36, 87/52, 91/04*

U.S. Cl. 260—583 E **15 Claims**

1. A water-soluble condensation product of hydroxymethylphosphonium compounds and amines which is produced by a process, comprising the essential step of condensing at 100° to 150° C. 1 mol of a tetrakis-(hydroxymethyl)phosphonium compound and 0.02 to 0.3 mol of an aliphatic primary monoamine with at most 8 carbon atoms or 0.02 to 0.1 mol of an aliphatic primary monoamine with 9 to 18 carbon atoms.

4,185,038

HYDROFORMYLATION CATALYSTS CONTAINING RHODIUM (I) OR IRIDIUM (I) CHEMICALLY BOUND DIRECTLY TO INORGANIC POLYMERS

John T. Carlock, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Jul. 14, 1978, Ser. No. 924,598

Int. Cl.[2] **C07C** *45/08*

U.S. Cl. 260—604 HF **8 Claims**

1. A method for converting olefins to aldehydes comprising converting said olefins in the presence of a catalyst of the general formula Ⓟ(═)A—O—M←$(CO)_n$ at temperatures of from about 90° C. to about 150° C. and pressures of from about 100 to about 1500 psig of an atmosphere of carbon monoxide and hydrogen, wherein A is silicon, titanium or aluminum, M is rhodium or iridium, n is 0 to 2, respectively, and Ⓟ is an inorganic oxide polymer selected from the group consisting of silica gel, alumina titania-alumina, open lattice clays, and crystalline alumino silicates.

4,185,039

SELECTIVE CATALYTIC OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF OLEFIN MONOMER

Jamal S. Eden, Akron, Ohio, assignor to B. F. Goodrich Company, Akron, Ohio

Filed Dec. 26, 1978, Ser. No. 972,770

Int. Cl.[2] **C07C** *21/00, 11/00*

U.S. Cl. 260—654 A **7 Claims**

7. In a process for the synthesis of ethylene dichloride by catalytic oxyhydrochlorination of ethylene wherein, as an incident to such synthesis, a gaseous waste stream is produced containing carbon monoxide, hydrogen chloride, and ethylene, and such stream is recycled to produce additional ethylene dichloride, the improvement comprising:

separating chlorine containing compounds from said waste stream and thereafter contacting said stream with a catalytically effective amount of copper chromite at a bed temperature in the range of from about 250° to about 320° C., the interval of contact being less than one second and the duration of contact being inversely proportional to the catalyst bed so as to effect maximum oxidation of carbon

monoxide without appreciable oxidation of the olefin monomer.

4,185,040

ALKYLATION OF AROMATIC HYDROCARBONS

John W. Ward, Yorba Linda, and Texas V. Inwood, La Habra, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Dec. 16, 1977, Ser. No. 861,196
Int. Cl.[2] C07C *5/04*
U.S. Cl. 585—467 16 Claims

1. An alkylation process which comprises passing a mixture of a C_2-C_4 olefin and a mole-excess of an alkylatable aromatic hydrocarbon through a fixed bed of an alkylation catalyst under alkylating conditions and recovering a desired alkylated hydrocarbon from the resulting product, said alkylation catalyst consisting essentially of a composite of an acidic crystalline aluminosilicate zeolite containing less than about 0.7 wt.% of Na_2O and a porous mineral oxide binder, said composite being in the form of substantially uniform sized extrudates having a maximum overall diameter between 0.03 and 0.08 inch, a length between 0.1 and 0.25 inch, and having a ratio of external surface area to volume of between 85 and 160 reciprocal inches.

4,185,041

CHANNEL SEALANT COMPOSITIONS

Warren R. Griffin, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 2, 1977, Ser. No. 830,227
Int. Cl.[2] C08L *85/02, 83/08, 75/04*
U.S. Cl. 525—188 6 Claims

1. A channel sealant composition consisting essentially of a non-crosslinked poly(fluoroalkoxy phosphazene) elastomeric mastic having the consistency of a caulking compound and an extrusion-inhibiting amount of vulcanized rubber particles of irregular shape and having sharp edges and angular surfaces, the particles being formed from a vulcanizate having a tensile strength of at least 1000 psi and a hardness of at least 80 Shore A points.

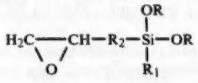
4,185,042

COUPLING AGENT

Hendrik T. Verkouw, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 17, 1978, Ser. No. 934,296
Claims priority, application United Kingdom, Dec. 29, 1977, 54147/77
Int. Cl.[2] C08L *43/04*
U.S. Cl. 525—332 10 Claims

1. A process for the production of a polymer comprising reacting one mole of a living lithium-terminated polymer having the formula P-Li wherein P is selected from the group consisting of polymer chains of one or more alkadienes having 4–12 carbon atoms and copolymer chains of one or more alkadienes having 4–12 carbon atoms and one or more monoalkenyl arenes of 8–18 carbon atoms, having the alkenyl radical attached to an arene ring carbon atom, with from about 0.05 to about 4.0 moles of a coupling agent of the general formula:



where the R groups are hydrocarbyl groups selected from the group consisting of alkyl, cycloalkyl, aryl alkaryl or aralkyl groups having from 1 to 20 carbon atoms; R_1 is selected from the group consisting of hydrogen, R and OR; and R_2 is selected from the group consisting of alkylene groups and a group of the formula $—R_3—O—R_4—$ wherein R_3 and R_4 are alkylene groups.

4,185,043

POLYMERS CONTAINING CHEMICALLY BONDED METAL ATOMS

Robert C. Shaffer, Playa del Ray, Calif., assignor to Hitco, Irving, Calif.

Continuation-in-part of Ser. No. 714,403, Aug. 16, 1976, Pat. No. 4,087,482. This application Apr. 5, 1978, Ser. No. 893,622
Int. Cl.[2] C08L *63/00;* C08G *83/00*
U.S. Cl. 525—364 5 Claims

1. A thermosetting polymer obtained by reacting an epoxy resin with the reaction product of either a saturated or an ethylenically unsaturated dicarboxylic acid and a metal complex which is a reaction product of tungsten carbonyl and/or molybdenum carbonyl with pyrrolidine.

4,185,044

FLAME-PROOFED UNREINFORCED AND UNFILLED POLYAMIDE MOULDING COMPOSITIONS

Peter Tacke; Dieter Neuray, and Dietrich Michael, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 25, 1978, Ser. No. 927,859
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754491
Int. Cl.[2] C08G *8/08, 69/46;* C08K *3/02*
U.S. Cl. 525—1 9 Claims

1. A flame-proofed, unreinforced, unfilled polyamide moulding composition containing as a flame-proofing combination 0.5 to 25% by weight of a mixture of:

a. from 55 to 95% by weight of at least one phenol/aldehyde condensation resin and

b. from 5 to 45% by weight of red phosphorus having an average particle size below 200 μum.

4,185,045

POWDERY COATING COMPOSITION

Ichiro Yoshihara; Tadashi Watanabe, and Osamu Iwase, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Filed Feb. 24, 1978, Ser. No. 880,797
Claims priority, application Japan, Feb. 26, 1977, 52/20453
Int. Cl.[2] C08L *25/08, 61/26, 61/28, 67/00*
U.S. Cl. 525—181 12 Claims

1. A powdery coating composition comprising:

(1) 10 to 40% by weight of a solid cross-linking agent having a softening point of 50° to 120° C. and prepared by heating 40 to 75% by weight of an acrylic resin having free hydroxyl groups and 60 to 25% by weight of an alkoxyaminotriazine at 50° to 120° C. for 1 to 6 hours, the reaction product prepared by said heating having a structure in which to the acrylic resin is added about 1 mole of the alkoxyaminotriazine per mole of the hydroxyl group contained in the acrylic resin, and

(2) 90 to 60% by weight of at least one base resin selected from the group consisting of acrylic resins and polyester resins having a softening point of 60° to 130° C. and an acid value of up to 30 and containing 0.4 to 2.0 moles of free hydroxyl groups per kilogram of the resin, the alkoxyaminotriazine having 0 to 1 non-methylolated NH bond per triazine ring, and at least 80% of the methylol groups of the alkoxyaminotriazine having been etherified with an aliphatic or alicylic alcohol or ethylene glycol monoalkyl ether having 1 to 4 carbon atoms in the alkyl group.

4,185,046

FLAME RETARDANT COPOLYESTER ADHESIVE

Brian W. Pengilly, Akron, Ohio, and Maneung Hahn, Cumberland, R.I., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 19, 1977, Ser. No. 826,005
Int. Cl.[2] C08L 67/00
U.S. Cl. 525—444 3 Claims

1. A flame retardant adhesive composition comprised of a combination of

(A) a copolyester adhesive resin consisting of glycol and acid units,

(1) said glycol units consisting of ethylene glycol units and at least one other glycol unit selected from the group consisting of 1,3-propylene units, cyclohexanedimethylol glycol units, neopentyl glycol units, tetramethylene glycol units and hexamethylene glycol units and

(2) said acid units consisting of terephthalic acid units and at least one other dicarboxylic acid unit selected from the group consisting of isophthalic acid units, phthalic acid units, adipic acid units, azelaic acid units, sebacic acid units, glutaric acid units and cyclohexane dicarboxylic acid units and

(B) a flame retardant bromine containing polyester prepared from 2,2'-bis-[4-(2-hydroxyethoxy)-3,5-dibromophenyl] propane and at least one dibasic acid having the structure $R(COOH)_2$ wherein R is an alkyene radical having 4 to 10 and preferably 4 to 7 carbon atoms.

4,185,047

THERMOPLASTIC MOLDING COMPOSITIONS

Stuart C. Cohen, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

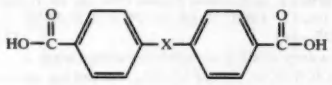
Filed Dec. 30, 1977, Ser. No. 866,008
Int. Cl.[2] C08L 67/06
U.S. Cl. 525—94 18 Claims

1. An improved molding composition, having improved mold releasability, said composition comprising:

(a) a block copolymer derived from blocks of

(i) a terminally reactive poly(1,4-butylene terephthalate) and

(ii) a terminally reactive aromatic/aliphatic copolyester of a dicarboxylic acid selected from the group consisting of terephthalic acid, isophthalic acid, naphthalene dicarboxylic acids, phenyl indane dicarboxylic acid and compounds of the formula



in which X may be alkylene or alkylidene of from 1 to 4 carbon atoms, carbonyl, sulfonyl, oxygen or a bond between the benzene rings, and an aliphatic dicarboxylic acid having from 6 to 12 carbon atoms in the chain and one or more straight or branched chain dihydric aliphatic glycols having from 4 to 10 carbon atoms in the chain, said copolyester having at least 10% of aliphatic units being derived from a dicarboxylic acid; or

(iii) a terminally-reactive aliphatic polyester of a straight chain aliphatic dicarboxylic acid having from 4 to 12 carbon atoms in the chain and a straight or branched chain aliphatic glycol, said blocks being connected by interterminal linkages consisting essentially of ester linkages;

(b) from about 0.25 to 4.5 percent by weight, based on the total composition, of a composition, of a polyolefin or olefin-based copolymer; and

(c) from about 0.02 to about 0.5% by weight, based on the total composition, of talc.

4,185,048

POLYVINYL CHLORIDE OF HIGH IMPACT STRENGTH PREPARED ON THE BASIS OF ETHYLENE-VINYL ACETATE OR ETHYLENE-ALKYLACRYLATE COPOLYMERS

Robert Buning, Troisdorf-Sieglar; Franz Blaschke, Witten, and Werner Trautvetter, Troisdorf-Spich, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 767,924, Feb. 11, 1977, abandoned, which is a continuation of Ser. No. 573,206, Apr. 30, 1975, abandoned. This application Jul. 24, 1978, Ser. No. 927,182
Claims priority, application Fed. Rep. of Germany, May 7, 1974, 2421900
Int. Cl.[2] C08L 51/00
U.S. Cl. 525—80 1 Claim

1. A polymer blend of:

(a) 4–15 wt.% of a graft polymer composed of 5–70 wt.% of vinyl chloride grafted in the gel phase, onto 95–30 wt.% of a copolymer of ethylene and vinyl acetate or ethylene and alkyl acrylate, said copolymer being 2.5–15 wt.% of vinyl acetate or alkyl acrylate and 97.5–85 wt.% of ethylene,

(b) 96–85 wt.% of polyvinyl chloride polymer which is at least one of polyvinyl chloride homopolymer and vinyl chloride copolymer.

4,185,049

MASS POLYMERIZATION PROCESS FOR POLYBLENDS

Robert L. Kruse, Springfield, and Fred M. Peng, Longmeadow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jul. 1, 1976, Ser. No. 701,844
Int. Cl.[2] C08F 279/02
U.S. Cl. 525—84 1 Claim

1. An improved process for the mass polymerizing of a solution comprising a monoalkenyl aromatic monomer having a diene rubber dissolved therein wherein the improvement comprises:

A. dissolving a minor amount of from about 0.01 to 5% by weight of ethylene in said solution,

B. mass polymerizing said solution at temperatures of from about 80°–180° C., with agitation,

C. forming polymer molecules of said monomers as a matrix phase having dispersed therein a diene rubber phase as rubber particles grafted with and having occluded at least a portion of said polymer molecules, said olefin compound being selected such that, during polymerization, said olefinic compound forms free radicals with said monoalkenyl aromatic monomer that are more active than a monoalkenyl aromatic free radical in chain transfer with said rubber increasing the grafting of said rubber with said polymer molecules.

4,185,050

PRESSURE SENSITIVE ADHESIVE COMPOSITIONS COMPRISING A MIXTURE OF TERPOLYMERS

Nelson R. Lazear, Chatham, and Robert W. Stackman, Morris Township, Morris County, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 972,852
Int. Cl.[2] C08L 33/02, 33/08
U.S. Cl. 525—221 11 Claims

1. A pressure sensitive adhesive composition comprising a mixture of at least three terpolymers, each terpolymer having the composition of

(a) from about 50 to about 92% by weight alkyl acrylate wherein the alkyl group contains 4 to 14 carbon atoms,

(b) from about 2 to about 50% by weight vinyl ester of a saturated carboxylic acid having from 1 to 6 carbon atoms, and

(c) up to about 6% by weight ethylenically unsaturated carboxylic acid having 3 to 5 carbon atoms, said composition of terpolymers comprising

(1) from about 12 to about 52% by weight of said terpolymer having a number average molecular weight of from about 20,000 to about 60,000,

(2) from about 20 to about 70% by weight of said terpolymer having a number average molecular weight of from about 60,000 to about 150,000, and

(3) from about 10 to about 50% by weight of said terpolymer having a number average molecular weight of from about 50,000 to about 250,000, each of said terpolymers in said composition having a different number average molecule weight,

said composition of terpolymers having a number average molecular weight of from about 20,000 to about 100,000, a weight average molecular weight of from about 100,000 to about 600,000, and a molecular weight distribution of from about 1 to about 7.

4,185,051

PRESSURE SENSITIVE ADHESIVE COMPOSITIONS CONTAINING A POLYMETALOXANE

Lawrence W. McKenna, Jr., Wilbraham; Ronald S. Finkelstein, Longmeadow, and John K. Haynes, Jr., Springfield, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1977, Ser. No. 863,113

Int. Cl.[2] C08L *33/08*

U.S. Cl. 525—370 **14 Claims**

1. A pressure sensitive resin composition comprising:

1. an interpolymer having a weight average molecular weight in the range of about 10,000 to about 500,000 and a glass transition temperature in the range of about −15° C. to about −75° C., the interpolymer comprising:

a. from about 0.5 to about 20 weight percent of at least one monomer containing a hydroxyl or carboxyl group, and

b. at least one acrylic ester containing from six to 20 carbon atoms; and

2. at least one polymetaloxane having the formula $[M_nO_{n-1}][OR]_{2n+2}$ wherein M is titanium or zirconium, n is an integer of from 2 to 20 and R is selected from the group consisting of aliphatic, substituted aliphatic, alicyclic and substituted alicyclic radicals containing from 2 to 10 carbon atoms and wherein the polymetaloxane is present in an amount sufficient to improve the cohesive strength of the dry pressure sensitive resin composition.

4,185,052

PROCESS FOR THIOPHOSPHORIC ACID DERIVATIVES

Jean-Pierre Leber, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

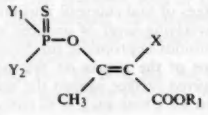
Continuation-in-part of Ser. No. 831,015, Sep. 6, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 914,515

Claims priority, application Switzerland, Sep. 8, 1976, 11387/76; Sep. 8, 1976, 11389/76

Int. Cl.[2] C07F *9/206*

U.S. Cl. 260—972 **7 Claims**

1. A process for the production of a compound of formula I



I

wherein

R_1 is C_1–C_5 alkyl

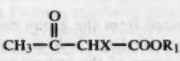
X is H, Cl or Br

Y_1 is C_1–C_5 alkoxy, Cl or Br and

Y_2 is Cl or Br and

the $—CH_3$ and $—COOR_1$ radicals are Cis one to another in the crotonic acid moiety,

which comprises condensing a compound of formula II



II

wherein X and R_1 are as defined above with a compound of formula III

III

wherein

Y_1 and Y_2 are as defined above and

Y_3 is Cl or Br

in an aqueous organic two phase system, in the presence of an alkali and a catalytic amount of a phase transfer catalyst.

4,185,053

PROCESS FOR MANUFACTURING SUBSTANTIALLY PURE DIALKYL PHOSPHOROCHLORIDOTHIONATE

Stanley B. Mirviss, Stamford, Conn., and Thomas M. Von Lehman, Hartsdale, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 3, 1977, Ser. No. 838,685

Int. Cl.[2] C07F *9/20*

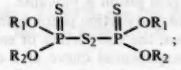
U.S. Cl. 260—986 **27 Claims**

1. A process for producing dialkyl phosphorochloridothionate compounds of the formula:

wherein R_1 and R_2 are each alkyl substituents of 1 to 12 carbon atoms, which comprises:

(a) chlorinating with a chlorinating agent an initial reactant composition containing at least one compound selected from the group consisting of:

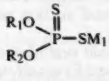
(i) a bis(phosphorothioic) sulfide of the formula:



;

and

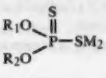
(ii) a first thioic acid or salt thereof of the formula:



wherein M_1, is selected from the group consisting of hydrogen, ammonium, alkaline earth metal and alkali metal, to produce a crude thionate reaction mixture containing the thionate and a quantity of impurities;

(b) distilling the crude thionate reaction mixture to produce an initial thionate distillate containing the thionate and a lesser quantity of impurities;

(c) admixing and reacting with the initial thionate distillate a second thioic acid or salt thereof of the formula



wherein M_2 is selected from the group consisting of hydrogen, ammonium, alkaline earth and alkali metal, to react with at least some of the impurities to produce a semi-pure thionate reaction mixture;

(d) contacting the semi-pure thionate reaction mixture with water to produce an organic phase and a water phase; and

(e) distilling the organic phase to produce a final thionate distillate of substantially pure thionate and a residue fraction.

4,185,054

VARIABLE VENTURI TYPE CARBURETOR

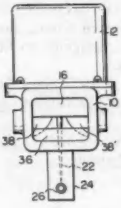
Norihiko Nakamura, Mishima; Takaaki Itoh, Susono, and Toshimi Misumi, Chita, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisan Industry Co., Ltd., both of Aichi, Japan

Filed Dec. 5, 1977, Ser. No. 857,802

Claims priority, application Japan, Oct. 15, 1977, 52-123003

Int. Cl.[2] F02M *9/06*

U.S. Cl. 261—44 C **6 Claims**



1. A variable venturi type carburetor provided with a suction piston movable in a direction perpendicular to an air flow, in accordance with changes in said air flow, so as to vary the area of a venturi opening formed between the bottom end of said suction piston and the wall of the carburetor body facing said bottom end of said suction piston, for maintaining the speed of said air flow passing through said venturi opening substantially constant,

said suction piston having a hole formed therein communicating said venturi opening with a suction chamber in which said suction piston is movable,

said bottom end of said suction piston being provided with a pair of partitions, the end surface of each partition being formed in an exponential curve at a distance measured from said bottom end, said pair of partitions being so disposed that said end surfaces thereof are opposite to each other,

said carburetor being provided with a spring disposed in a space between said suction chamber and said suction piston for urging said suction piston, but not with oil damper means, and

wherein the shape of said venturi opening is so arranged that the pressure increase ΔP_2 at said venturi opening in accordance with the displacement ΔX of said suction piston satisfies the equation

$$A_1(E/V) > \Delta P_2/\Delta X$$

wherein

A_1 is the cross-sectional area, facing said suction chamber, of said suction piston,

E is the bulk modulus of air, and

V is the volume of said suction chamber.

4,185,055

PROCESS FOR HEAT-TREATING CARBON BLOCKS

Eric Barrilon, and Michel Jarry, both of Saint Jean de Maurienne, France, assignors to Aluminum Pechiney, Paris, France

Continuation of Ser. No. 523,332, Nov. 13, 1974, abandoned, which is a continuation of Ser. No. 291,788, Sep. 25, 1972, abandoned. This application Oct. 18, 1976, Ser. No. 733,032

Claims priority, application France, Sep. 24, 1971, 71.34418

Int. Cl.[2] C01B *31/02*

U.S. Cl. 264—29.5 **10 Claims**

1. In a method for heat-treating carbonaceous products weighing more than 100 kg wherein the carbonaceous product contains from 12–20 kg of tar binder per 100 kg of coke plus binder in which the products are heated to a temperature between 900° and 1400° C. with the heating pattern being such that the surface of the product does not exceed 700° C. until the core thereof has reached 450° C., the improvement comprising heating the product until the core temperature of the product is brought to between 120° and 170° C., heating the product to raise the core temperature to beyond 450° C. in less than 10 hours, with the heating pattern being such that the surface of the product does not exceed 700° C. until the core thereof has reached 450° C., and continuing the heating of the product at a rate of 50° to 100° C. per hour until the calcination temperature within the range of 900° to 1400° C. is reached.

4,185,056

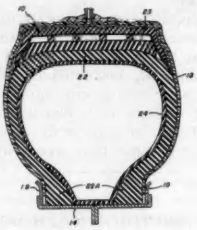
METHOD OF MAKING A FLEXIBLE ELASTOMERIC MATRIX AND METHOD OF RETREADING TIRES THEREWITH

Richard H. Detwiler, North Windham, Me., assignor to Noyes Tire Co., Westbrook, Me.

Continuation-in-part of Ser. No. 748,309, Dec. 7, 1976, abandoned. This application May 11, 1978, Ser. No. 905,005

Int. Cl.[2] B29H *5/04*

U.S. Cl. 264—36 **3 Claims**



1. The method of forming a flexible matrix for use in retreading tires that has been buffed and provided with a layer of uncured rubber adequate to provide a new tread and sidewall portions for the buffed area of the tire when retreaded, said method comprising the steps of selecting a male mold that represents the transverse contour wanted for the tread and selected sidewall portions of said tire when retreaded, has the wanted design and dimensions, and is within the approximate range of from 0–5% less than the wanted outside diameter of the tire when retreaded, placing transverse strands of venting material about the male mold with their free ends extending at least to the outer edges of said sidewall portions, forming on the male mold an overlying layer of uncured rubber having cross sectional dimensions appropriate for forming the tread and sidewall portions of the matrix on the mold, and then molding the thus layered surface against the male mold with heat and pressure and for a time such as to cure and mold the rubber and secure said strands thereto while simultaneously permitting air between the underlying and overlying layers to escape via said venting means, and then removing the cured layer as a somewhat elastic, flexible matrix including an internal, female, tread-forming ring portion and sidewall portions

with the strands embedded in and substantially continuously exposed on the said internal surface with free ends extending at least to the margins of the side portions thereof, and the additional steps of then spreading one of said buffed and layered tires, placing the matrix over the spread, layered tire with a mold release between the matrix and the uncured rubber layer, releasing the spread tire to permit it to return to its normal shape and to bring the sidewall portions of the buffed area against the side portions of the matrix, inflating the tire and subjecting the layered tire to a curing temperature and an external pressure greater than its internal pressure for a predetermined interval and simultaneously venting via the transverse strands any air entrapped between the matrix and the tire, and then deflating the retreaded tire and removing the matrix therefrom for re-use on another of said tires in the same manner.

4,185,057

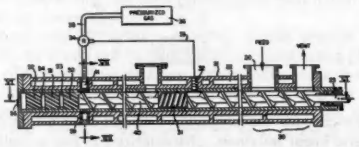
DEWATERING OF PLASTIC MATERIALS WITH CONTROLLED GASEOUS INJECTION

Paul H. Rossiter, Paoli, and Marvin F. Loetterle, Lafayette Hill, both of Pa., assignors to W Bar E, Inc., Marianna, Fla.

Continuation of Ser. No. 470,171, May 15, 1974, abandoned, which is a continuation of Ser. No. 877,743, Nov. 18, 1969, abandoned. This application Jan. 22, 1976, Ser. No. 651,456

Int. Cl.[2] B29D *27/06;* **G01L** *1/00*

U.S. Cl. 264—40.1 **8 Claims**



1. In a method of producing essentially dry rubber particles containing a multiplicity of gas-filled closed cells therein, from rubber material, the steps which comprise mechanically working said rubber material under heat and pressure such that the rubber material is pliable and workable, forming a first seal of a portion of said pliable material to form a pressure region in which said pliable material is maintained under pressure, sensing and signaling the change in pressure resulting from the formation of said pressure region, injecting a fluid under controlled pressure in response to said signal into another portion of said rubber material downstream of said pressure region while it is workable and under pressure, said fluid being a gas at normal atmospheric pressure and temperature, co-mingling said rubber material and said injected fluid under pressure while causing them to flow in a downstream direction, substantially uniformly mixing said fluid into said rubber material, and releasing both said rubber material and the admixed fluid, cocurrently and in a downstream direction, to an area of reduced pressure.

4,185,058

PROCESS FOR SPINNING HYDROPHILIC ACRYLIC FIBERS WITH IMPROVED COLORING RESPONSE TO DYES

Ulrich Reinehr; Toni Herbertz, both of Dormagen, and Hermann-Josef Jungverdorben, Grevenbroich, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 13, 1978, Ser. No. 877,318

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1977, 2706522

Int. Cl.[2] B29H *7/20;* **D01F** *6/18*

U.S. Cl. 264—49 **9 Claims**

1. A process for the production of hydrophilic fibers and filaments with good coloring response to dyes, having a core-and-sheath structure with a highly microporous core and a substantially compact sheath and having a water retention capacity of at least 10%, and with pores in the core having an average pore diameter, measured in the direction of the cross-section of the fiber, of at most 4000 A, comprising dry-spinning, in a spinning duct and spinning air, a solution of a hydrophobic filament forming synthetic polymer, a suitable solvent and from 5 to 50% by weight, based on the quantity of solvent and polymer, of an additive which is essentially a non-solvent for the polymer and which is readily miscible with the spinning solvent, said spinning conducted at a duct temperature below the boiling point of the spinning solvent used.

4,185,059

PROCESS FOR THE PREPARATION OF HYDROPHILIC FIBRES AND FILAMENTS FROM SYNTHETIC POLYMERS

Ulrich Reinehr, Dormagen, and Hermann-Josef Jungverdorben, Grevenbroich, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 8, 1977, Ser. No. 775,574

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2609829

Int. Cl.[2] B29H *7/20*

U.S. Cl. 264—51 **9 Claims**

1. A process for the production of hydrophilic filaments and fibers having a sheath-core structure and a microporous core which comprises spinning a fiber-forming wet or dry spinnable synthetic polymer as a composition containing, in addition to the spinning solvent:

(A) from 10 to 50% by weight, based on the spinning solvent and polymer solids content, of non-solvent for the polymer to be spun, which non-solvent

(a) has a higher melting or boiling point under normal conditions than the spinning solvent,

(b) is miscible with the spinning solvent and with a liquid suitable for use as a washing liquid, and

(B) from 0.1 to 20% by weight, based on the polymer solids content, of at least one gas former which decomposes into a gas under heating; and washing said non-solvent from said filaments or fibers; in which said fibers or filaments are subjected to a temperature above the decomposition temperature of the gas former during spinning or in a subsequent treatment step.

4,185,060

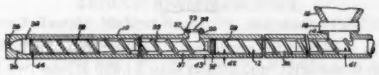
METHOD OF MANUFACTURING STRUCTURAL FOAM PLASTIC PRODUCTS FREE FROM UNDESIRABLE CONTAMINANT CONSTITUENTS

Michael Ladney, Jr., 18125 E. Ten Mile Rd., East Detroit, Mich. 48021

Filed Mar. 17, 1978, Ser. No. 887,616

Int. Cl.[2] B29D *27/00*

U.S. Cl. 264—54 **9 Claims**



1. The method of making structural foam plastic products which comprises:

(a) mixing a granular thermoplastic resin and a heat activated blowing agent to form a foamable granular mixture containing thermally activatable gas and vapor-forming constituents which include both undesirable contaminant constituents, such as water and low-boiling point impurities, as well as desired blowing and cell-forming gaseous constituents;

(b) feeding said granular mixture from a hopper to a first compressive working and heating zone located at the inlet at one end of a barrel-enclosed, screw-advancing, two stage plasticating apparatus wherein the granular mixture

is plasticated and heated to a temperature at which said blowing constituents at least being to vaporize and form gases to thereby produce a molten foamable thermoplastic resin mixture;

(c) advancing said plasticated and heated mixture from said first zone by means of said screw to a selective venting and a decompression second zone of said apparatus wherein the compression on the mixture is relieved and said undesirable contaminent constituents are substantially vented from the mixture without substantial loss of the molten foamable thermoplastic resin mixture;

(d) advancing said vented mixture by means of said screw to a third zone of said apparatus wherein the mixture is again subjected to compression, working and heating to further raise the temperature thereof and to plasticate the mixture to a more fluid foamable condition; and

(e) thereafter discharging the foaming mixture from said third zone through suitable means for forming the foamed mixture into a structural foam plastic product.

4,185,061

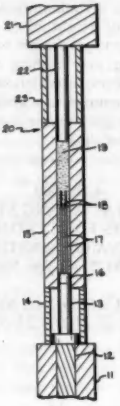
PRODUCTION OF CERAMIC ARTICLES

Jonathan W. Hinton, Birmingham, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Jul. 19, 1978, Ser. No. 926,012

Int. Cl.[2] C04B *35/56*

U.S. Cl. 264—65 **4 Claims**



1. In a method for producing a ceramic insulator having a length-to-diameter ratio greater than 3:1 and at least two bores extending generally longitudinally of the insulator, said method comprising charging ceramic batch into a longitudinally extending die with stepped arbors supported therein by a plunger to form each of the bores, pressing the batch in the die between the arbor plunger and an opposing plunger, ejecting the blank and removing the arbors therefrom, contouring the blank to desired shape, and firing the contoured blank, the improvement of controlling the relative motion of the opposing plungers with respect to the longitudinal wall of the die while pressing the blank so that at least 80 percent of the total plunger movement is in the direction of decreasing arbor diameter whereby variations in the end-to-end density of the insulator are minimized.

4,185,062

PROCESS FOR HIGH SPEED PRODUCTION OF PRE-ORIENTED YARNS

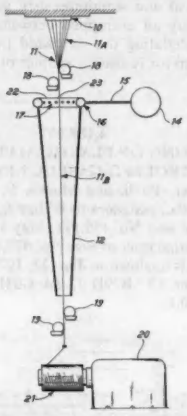
Ettore Luzzatto, Ashqelon, Israel, assignor to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa s.p.a., Milan, Italy

Filed Feb. 23, 1978, Ser. No. 880,487

Claims priority, application Switzerland, Feb. 23, 1977, 2272/77

Int. Cl.[2] D01D *5/08*

U.S. Cl. 264—176 F **5 Claims**



1. Process for the preparation of pre-oriented yarns from synthetic linear polymers, characterized in that a melt of the polymer is extruded from a spinneret and the extruded yarn, on its way to mechanical winding means, passes through a zone in which a speed is imparted to the ambient gas in said zone in the direction of travel of the yarn and in its vicinity, said speed of the ambient gas being substantially equal to the difference between the actual wind-up speed and the speed at which it would be necessary to wind up the yarn in order to obtain the desired mechanical characteristics thereof when operating in an uncontrolled atmosphere, the yarn being wound up by said mechanical winding means at a speed of greater than 4100 meters per minute after leaving said zone to obtain a yarn having an elongation at break of at least 70%.

4,185,063

SHAPING AND STRETCHING AQUEOUS FORMIC ACID SOLUTIONS OF POLYPYRROLIDONE, FILAMENT AND FILM PRODUCTS

Challoner R. Chute, 918 Rugby Rd., Charlottesville, Va. 22903

Continuation-in-part of Ser. No. 687,229, May 17, 1976, abandoned, which is a continuation of Ser. No. 547,033, Feb. 4, 1975, abandoned. This application Jun. 8, 1977, Ser. No. 804,812

Int. Cl.[2] C08G *69/24;* **D01D** *5/12*

U.S. Cl. 264—210 **8 Claims**

1. A method of preparing a shaped polypyrrolidone article of enhanced tensile strength comprising shaping a solution consisting essentially of polypyrrolidone and 1.5 to 4 parts, by weight, per part of polypyrrolidone of aqueous formic acid containing from 3% to 9%, by weight, of water into an article of desired shape and stretching said article while still impregnated with aqueous formic acid.

4,185,064

PROCESS FOR HIGH SPEED PRODUCTION OF FILAMENT CABLES

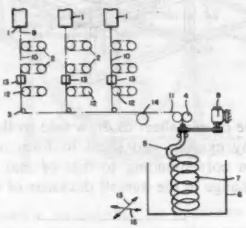
Heinz Schippers, Remscheid, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid-Lennep, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 850,852

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1976, 2655010

Int. Cl.[2] D01D 5/12

U.S. Cl. 264—210.2 16 Claims



1. A process for production of cables of filaments of thermoplastic, melt-spun synthetic polymer at a production speed in excess of 2,500 m/min, the cable having more than 10,000 dtex, said process comprising the steps of

simultaneously advancing a plurality of melt streams of at least one of said polymers through a corresponding plurality of at least three spinning nozzles, all nozzles lying in the same horizontal plane, each nozzle having the same quantity of 500 to 3,000 spinning dies, directed in the vertical direction downwards for melt spinning 500 to 3,000 filaments from each nozzle;

leading said filaments spun from each nozzle in a vertical quenching shaft associated to each nozzle for quenching said filaments by a stream of air;

assembling said filaments spun from each nozzle to a bundle of filaments, all bundles having the same amount of filaments and the same denier in the range of 1,000 to 5,000 dtex;

while all bundles are running downwards in a vertical direction parallel to each other and in only one common vertical plane, leading each of said bundles to a stretching zone below each quenching shaft consisting of a first and a second godet means to be wrapped around, the peripheral velocity of said first godet means being in excess of 600 m/min, the peripheral velocity of said second godet means being higher than that of said first godet means to stretch each bundle between separate godet means, associated to each bundle by the same stretching ratio to all bundles;

heating each of said bundles to a uniform temperature above 40° C. during the stretching;

deviating each bundle at a first point below said first and said second godet means to only one second point common to all bundles, lying in said vertical plane at one side of all of said first points to thereby plying said bundles to a cable of at least three bundles, said cable having a denier of more than 10,000 dtex;

after stretching, leading each bundle to a shrinking zone, consisting of said second and a third godet means below said quenching shaft, the peripheral velocity of said third godet means being less than the peripheral velocity of said second godet means for shrinkage of the filaments, each bundle being heated in said shrinkage zone to a temperature between 140° and 230° C.;

advancing said cable with more than 2,500 m/min by only one common draw-off means; and

releasing the tension in said cable and decreasing the axial running speed of said cable to less than 10% of its previous velocity for depositing the cable in a horizontal collection plane in a can which is reciprocating in said horizontal plane.

4,185,065

PROCESS FOR MANUFACTURING TIRE SEGMENTS

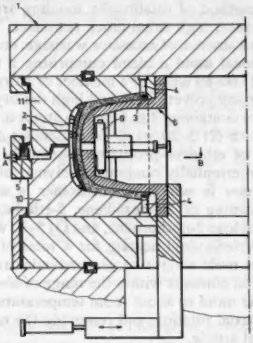
Ulrich Knipp, Berg.-Gladbach, and Paul Vente, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 8, 1977, Ser. No. 858,573

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658374

Int. Cl.[2] B29D 3/02; B29H 5/02

U.S. Cl. 264—254 6 Claims



1. A process for the manufacture of a tire in segments in a closed mold wherein the internal surface of the mold determines the external surface of the tire segments, comprising:

(a) radially moving from the center of a mold towards the internal surface of the mold a molding tool which determines the shape of the internal surface of the tire segments while leaving a space between said molding tool and said internal surface of said mold, said space conforming to the shape of said tire segments;

(b) filling said space between said molding tool and said internal surface with a plastic compound, and when said plastic compound is solidified;

(c) moving said mold or said molding tool in the circumferential direction so that the next segment follows immediately upon the segment already produced; and

(d) repeating steps (a), (b), and (c) until the tire is formed.

4,185,066

METHOD OF TREATING MAGNESIUM OXCHLORIDE AND MAGNESIUM OXYSULFATE ARTICLES TO REDUCE EFFLORESCENCE

Chester S. Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 18, 1978, Ser. No. 935,037

Int. Cl.[2] B32B 17/02; C04B 9/02

U.S. Cl. 264—257 8 Claims

1. A method of manufacturing an article of magnesium oxychloride or oxysulfate cement comprising reacting magnesium chloride or magnesium sulfate with sufficient quantities of magnesium oxide to form magnesium oxychloride or oxysulfate cement paste; introducing said paste into a mold containing a fiber glass mat as reinforcement for the cement; molding the cement and fiber glass mat under pressure to form a solid article of fiber glass reinforced magnesium oxychloride or oxysulfate cement, removing the solid article so formed from the mold and contacting the solid article with water at a temperature of at least 90° F. for a period of time of at least one

minute to thereby form an article having a reduced tendency to effloresce.

4,185,067

METHOD OF ROTATIONALLY MOLDING PLASTIC ARTICLES

John L. MacAdams, Schaumburg, Ill.; William C. L. Wu, Pittsford, N.Y., and Richard S. Joyner, Rolling Meadows, Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 327,577, Jan. 29, 1973, abandoned. This application Sep. 25, 1974, Ser. No. 509,097

The portion of the term of this patent subsequent to Jun. 28, 1994, has been disclaimed.

Int. Cl.[2] B29C *5/04;* **C08L** *23/08*

U.S. Cl. 264—310 **5 Claims**

1. The method of rotationally molding articles of high impact resistance, high stress crack resistance, with smooth surfaces and an absence of excessive warpage, comprising: placing in a rotational mold a blend comprising a three component blend of (1) 60–80 wt.% of a member of a first class consisting of high density polyethylene and high density ethylene-alkene copolymers containing 4 to 6 carbon atoms in the alkene group blended with (2) 5–20 wt.% of a member of a second class consisting of ethylene-propylene essentially random copolymer and an essentially random terpolymer of ethylene-propylene-monomer in which the monomer is selected from the group consisting of 1,4-hexadiene, 5-ethylidine-2-norbornene and 5-methylene-2-norbornene, and (3) 5–30 wt.% of a copolymer of ethylene-vinyl acetate for a total of 100%; biaxially rotating the mold about two perpendicular axes while heating the mold and contents within the range of about 400°–900° F.; cooling said mold to about room temperature while maintaining said coaxial rotation; and removing the resulting rotationally molded article.

4,185,068

PROCESS FOR PREPARING A WEB OF FILM PRIOR TO WINDING IT INTO A WOUND ROLL

Willi J. Schmidt, Taunusstein, and Norbert Roth, Ingelheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 865,547, Dec. 29, 1977, abandoned, which is a continuation of Ser. No. 502,911, Sep. 4, 1974, abandoned. This application May 3, 1978, Ser. No. 902,372

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1973, 2344679

Int. Cl.[2] B29D *7/20*

U.S. Cl. 264—284 **11 Claims**

1. A process for continuously preparing a web of base film composed of synthetic polymer material for a subsequent winding operation, by providing it with embossed lines, preferably one line along each edge or very near each edge of the web, which process comprises embossing the base film while the film is in a thermal state in which the tensioned film may be easily embossed, and is tensioned in all directions without undergoing a stretching operation effecting a dimensional change of the film, and then cooling it, said base film being biaxially oriented by a biaxial stretching operation.

4,185,069

PRODUCTION OF PLASTICS ARTICLES

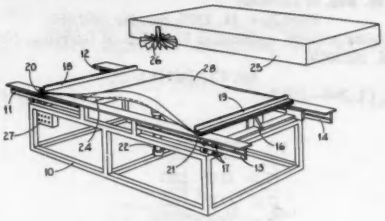
George L. Smith, Ridgeway, Binton, Near Stratford-Upon-Avon, Warwickshire, England, and Leslie J. Smith, 37 Lingfield Rd., Eastwick Park, Evesham, Worcestershire, England (WR11 6XG)

Filed Dec. 8, 1976, Ser. No. 748,532

Int. Cl.[2] B29C *17/02*

U.S. Cl. 264—322 **6 Claims**

1. A method of producing an article from thermoplastic flat sheet material, said article having a re-entrant configuration, comprising the steps of supporting said sheet along two opposite edges thereof in clamping means mounted respectively on a pair of trolleys freely movable in a plane parallel to the plane of said sheet, applying heat to said sheet until said sheet has reached a predetermined degree of plasticity, thereafter applying a former to said sheet and moving said former in a direction transverse with respect to the plane of said sheet and against



the resistance of said sheet to draw said trolleys toward each other thereby causing said sheet to form into a re-entrant configuration corresponding to that of said former without significant change in the overall thickness of said sheet.

4,185,070

PROCESS FOR INJECTION MOLDING THERMOPLASTIC ARTICLES WITH REDUCED COMBUSTIBILITY

Richard G. Angell, Jr., and Laurence H. Gross, both of Bridgewater, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 10, 1977, Ser. No. 850,370

Int. Cl.[2] B28B *1/24*

U.S. Cl. 264—328 **10 Claims**

1. The process for the production of injection molded thermoplastic articles having reduced combustibility comprising: maintaining a mold cavity at a preselected back pressure sufficiently high to substantially prevent foaming of a thermoplastic melt to be introduced therein; injecting thermoplastic melt into said mold cavity under a pressure in excess of said back pressure to fill said mold cavity; said thermoplastic melt containing from about 50 to 70% by weight of alumina trihydrate and from about 1 to 12% by weight of water as a liquid processing aid thereby permitting increased rate of thermoplastic melt flow while filling said mold cavity.

4,185,071

ETHYLENE POLYAMINES AS COLD-END ADDITIVES

Richard J. Sujdak, Morrisville, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Oct. 13, 1978, Ser. No. 950,960

Int. Cl.[2] C23F *11/00, 11/02*

U.S. Cl. 422—9 **9 Claims**

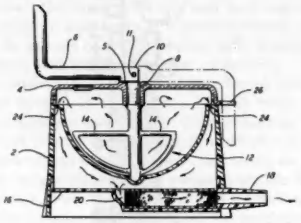
1. A method of reducing the amount of sulfuric acid corrosion of metal parts at the cold-end of a combustion system and in contact with combustion gases derived from the combustion of sulfur-containing fuel, which combustion gases flow along a path at the cold end of the combustion system from a first zone of relative turbulence to a second zone at which said metal parts are located, said method comprising:

adding to the combustion gases at the cold end of the combustion system and at the zone of turbulence an effective amount for the purpose of an additive comprising at least one member of the group consisting of ethylene polyamines which include a hydrocarbon chain consisting of at least two amino groups which are ethylene-interconnected such that said additive will travel along with said gases as vapor and/or liquid droplets, from said zone of turbulence to said second zone.

4,185,072
ORTHOPEDIC CEMENT MIXER

George Puderbaugh, Manlius; Robert W. Pike, Syracuse; Thomas S. Myers, Sherrill, and James H. Frakes, Jr., Manlius, all of N.Y., assignors to Diemolding Corporation, Canastota, N.Y.

Filed Feb. 17, 1977, Ser. No. 769,552
Int. Cl.[2] B01L *1/00*; B01F *7/16*
U.S. Cl. 422—99 3 Claims



1. A combination mixing-reaction apparatus for admixing reactants which produce gaseous reaction products and removing said reaction products from the apparatus, comprising:

(a) a housing having upwardly extending walls, a closed bottom and an open top and an exhaust port in said wall adapted for connection to exhaust means;

(b) a mixing vessel of bowl shaped configuration carried upon and supported by the upper portion of the wall of said housing extending downwardly into said housing defining a space between the walls of the housing and the mixing vessel;

(c) a removable top cooperating with the housing to close the mixing vessel, thereby containing gaseous reaction products within said vessel;

(d) at least one vent in the upper wall of said vessel communicating with the interior of the mixing vessel, the space between said vessel and housing and the exhaust port in the wall of said housing;

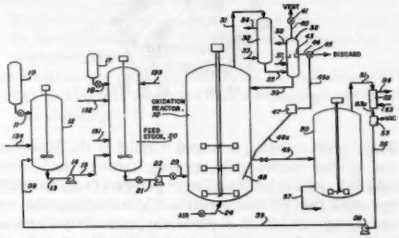
(e) mixing means operatively associated with said top extending into the vessel, said mixing means comprising a plurality of open-center mixing vanes, at least one of which extends substantially to the wall of said vessel, and means for rotating said vanes within said vessel.

4,185,073
APPARATUS FOR ISO- OR TEREPHTHALIC ACID PRODUCTION IN AND RECOVERY FROM BENZOIC ACID-WATER SOLVENT SYSTEM

David R. Marsh, Lisle, and Leonard E. Stark, Bristol, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 708,360, Jul. 26, 1976, Pat. No. 4,081,464. This application Jul. 26, 1977, Ser. No. 819,101
Int. Cl.[2] B01J *1/00*
U.S. Cl. 422—111 2 Claims

1. For the continuous production of iso- or terephthalic acid in a solvent system consisting essentially of 90 to 97 weight percent benzoic acid and 10 to 3 weight percent water by the catalytic air oxidation of m- or p-xylene at a constant gauge pressure of from 7 up to 21 kg/cm^2 and at a controlled, selected temperature within the range from 175° C. up to 235° C. wherein heat of reaction is removed by vaporization of water and benzoic acid from the solvent system and control of the selected temperature is effected by varying the rate at which water condensate is returned to the solvent system to a rate inverse to the rate of change from the selected reaction temperature and in an amount such that the water concentration in the solvent system does not go below the 3 percent nor above the 10 percent in the solvent system; the combination of elements of apparatus comprising a stirred-tank-type oxidation vessel having a stirred zone comprising the portion of the vessel's liquid contents kept in flow by the vessel's stirring elements amd said vessel being closed at its top and bottom and further having an air inlet into the bottom of the vessel below its stirred zone, a liquid feedstock inlet into a lower portion of the stirred zone, a liquid inlet into an upper portion of the stirred zone, means for sensing the temperature of the fluid in the lower portion of the stirred zone between the feedstock inlet and the air inlet and providing an output corresponding to the selected temperature, and an exhaust outlet in its top for discharge of gaseous mixture containing vapors of benzoic acid and water from said vessel; a reflux condenser connected with said exhaust outlet to receive said exhaust and condense benzoic acid and partially condense water as liquid reflux recycled to the stirred zone through said exhaust outlet and to discharge a first uncondensed portion of such gaseous exhaust containing water vapor; means for condensing an amount of water from said uncondensed portion of such gaseous exhaust at a rate



varying inversely to the rate of change of temperature of the fluid in said stirred zone indicated by the output from said temperature sensor; an external integrating control means capable of having set therein a constant corresponding to the temperature to be maintained in the oxidation zone, receiving as input thereto the output of said temperature sensor in the oxidation vessel, comparing said input to said constant, and providing an output inverse to said comparison; means for transfer of the output of the temperature sensor to the input of the integrating means; means for transfer of said inverse output to the variable water condenser to increase or decrease its operating temperature as the temperature of the stirred zone decreases or increases thereby decreasing or increasing the rate at which water is condensed; means for transfer of said water condensate to the liquid inlet into the upper portion of the vessel, and means for transfer of the second uncondensed portion of the exhaust through a pressure controller maintaining the system at constant pressure.

4,185,074
CATALYTIC CONVERTER WITH A CATALYST BED SUPPORTER

Takayuki Yamazaki, Tokyo; Takahisa Izumi, Fujisawa, and Hajime Kawasaki, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 1, 1977, Ser. No. 783,779
Claims priority, application Japan, Apr. 2, 1976, 51-41334[U]
Int. Cl.[2] B01J *8/02*; F01N *3/15*
U.S. Cl. 422—177 8 Claims

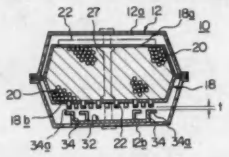
1. A catalytic converter for catalytically treating the exhaust gases emitted from an engine, comprising:

a. a container having at one end thereof an exhaust gas inlet opening and at the other end thereof a treated gas outlet opening;

b. a catalyst bed disposed in said container to define in said container first and second chambers which are respectively located between said inlet opening and said catalyst bed and between said outlet opening and said catalyst bed so that the exhaust gas fed through said inlet openings passes through said first chamber, the interior of said

catalyst bed and said second chamber before discharging through said outlet opening; and

c. a bed supporting device disposed in said second chamber for supporting said catalyst bed only when said catalyst bed is subjected to expansion causing a portion thereof to extend toward said bed supporting device, said bed supporting device comprising an elongated flat main portion with first and second longitudinal ends, said flat main portion being directly secured to said container at a limited portion thereof adjacent said first end, a plurality of elongated spaced flange portions which perpendicularly project from said flat main portion toward said catalyst bed so as to be engageable with said catalyst bed to support the same when said bed is subjected to expansion, said



flange portions being arranged parallel to the flow direction of the treated gases passing through said second chamber, and each of said flange portions comprising at its free end a bent platform portion which is engageable with said catalyst bed upon expansion of said catalyst bed, and at least one lug portion which integrally and flexibly extends from said longitudinal end toward said catalyst bed and is secured at the leading ends thereof to an inwardly raised portion of said container, said lug portion being inclined with respect to the plane substantially defined by said flat main portion, whereby longitudinal expansion of said bed supporting device due to heat is substantially absorbed by flexing of the inclined lug portion.

4,185,075

PHOSPHORIC ACID AMMONIATION APPARATUS WITH WATER QUENCH

John D. Ellis, Upland, Calif.; George Crichton, Guadalajara, Mexico; Millard C. Godwin, and George C. Morris, both of Lakeland, Fla., assignors to Occidental Research and Engineering Ltd., London, United Kingdom

Continuation of Ser. No. 684,348, Nov. 20, 1967, abandoned, Continuation of Ser. No. 785,321, Dec. 19, 1968, abandoned, Continuation of Ser. No. 853,683, Aug. 28, 1969, abandoned. This application May 20, 1971, Ser. No. 145,493

Int. Cl.[2] C01B *15/16;* **C05B** *11/00;* **B01J** *8/04*

U.S. Cl. 422—191 **14 Claims**

1. Apparatus suitable for the ammoniation of phosphoric acid, assembled in combination, comprising,

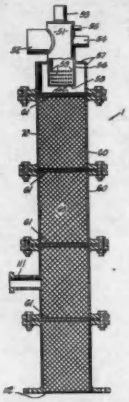
(a) a fluid reactor means having a plurality of inlet means at one end thereof suitable for the admission of phosphoric acid, ammonia and water, said inlet means being so positioned as to provide for rapid ammoniation of the phosphoric acid with the evolution of heat, and a plurality of apertures at the other end thereof to provide an exit means for the reaction products mixture resulting from the reaction of the components admitted into said fluid reactor means through said inlet opening means, said fluid reactor means being adapted to the expulsion of the reaction products mixture therefrom by steam generated by the heat liberated in the ammoniation process,

(b) means for separating steam from the liquid portion of the reaction mixture and removing the separated steam from said apparatus,

(c) columnar vessel means having an outlet means at one end thereof and enclosing at the other end thereof the said other end of said fluid reactor means containing said apertures,

(d) a plurality of barrier means obturating said columnar vessel means in spaced-apart relationship, said barrier means having a plurality of apertures therein for the passage of reaction product mixture therethrough,

(e) inlet quench means connected to said columnar vessel



means for the introduction of a quenching liquid into said vessel to produce a quenched, cooled liquid ammonium polyphosphate solution,

(f) means for further cooling said quenched, cooled liquid solution to provide a liquid product, and,

(g) means for adjusting the pH of the cooled liquid ammonium polyphosphate product, including means for determining the pH of said product.

4,185,076

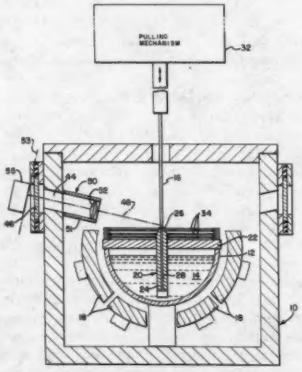
APPARATUS FOR CONTROLLED GROWTH OF SILICON AND GERMANIUM CRYSTAL RIBBONS

Arthur E. Hatch, Waltham, and Douglas A. Yates, Burlington, both of Mass., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Mar. 17, 1977, Ser. No. 778,577

Int. Cl.[2] B01J *17/18*

U.S. Cl. 422—246 **12 Claims**



1. Apparatus for growing a ribbon shaped crystalline body of silicon or germanium so that said body has a selected cross-sectional shape for a selected distance along its length, said

material being at least partially reflective to radiation at a preselected wavelength, said apparatus comprising means for growing and pulling said crystalline body from a growth pool of melt supplied by a capillary die and means for replenishing said growth pool with melt provided from a reservoir supply of melt, said body and said growth pool of melt forming a solid/liquid interface and said growth pool being characterized by a meniscus which extends from said die and joins said body at said interface to form a solid/liquid/vapor junction above said die at which the liquid surface of said meniscus intersects the solid surface of said body at a predetermined meniscus angle when the growth of said crystalline body is under steady state conditions, said apparatus further comprising:

means for observing a plurality of preselected points on at least the portion of the surfaces of said body and said meniscus adjacent said junction for the quantity of radiation of said preselected wavelength emitted and reflected from each of said points in a direction along an axis substantially perpendicular to the meniscus surface formed at said junction when the growth of said crystalline body is under steady state conditions, and for producing a like plurality of first electrical signals, each corresponding to the observed quantity of radiation reflected from a respective one of said points;

means for comparing each of said first electrical signals with a predetermined first reference signal so as to determine which of the observed points exhibit a sharp change in the amount of reflected radiation of said preselected wavelength and for generating a control signal as a function of the spatial position of said points exhibiting a sharp change in the amount of reflected radiation; and

means, responsive to said control signal, for controlling the speed at which said body is being pulled or the temperature of said growth pool of melt so as to maintain those points exhibiting said sharp change at a preselected spatial position relative to a predetermined reference position.

4,185,077

METHOD OF RECOVERING URANIUM FROM AQUEOUS SOLUTION

Robert L. Albright, Churchville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 31, 1975, Ser. No. 627,829

Int. Cl.[2] C01G *43/00*

U.S. Cl. 423—7 **4 Claims**

1. A process for recovering uranium from uranium bearing leach liquors which comprises contacting the leach liquors with a polymeric crosslinked vinyl benzyl chloride anion exchange resin, thereafter eluting from the resin the uranium in concentrated salt form.

4,185,078

EXTRACTION PROCESS FOR RECOVERY OF RHENIUM

L. Rita Quatrini, Athens, and Martin B. MacInnis, Towanda, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 818,938, Jul. 25, 1977, abandoned, which is a continuation of Ser. No. 712,817, Aug. 9, 1976, Pat. No. 4,049,771, which is a continuation of Ser. No. 510,067, Sep. 12, 1974, abandoned. This application Jul. 19, 1978, Ser. No. 926,167

The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.

Int. Cl.[2] C01G *47/00*

U.S. Cl. 423—49 **2 Claims**

1. In a process wherein an aqueous solution containing a relatively high concentration of molybdenum and a relatively low concentration of rhenium is contacted by selective organic extractant solution to preferentially extract the rhenium therefrom without an appreciable extraction of molybdenum into the organic solution and thereafter the organic and aqueous soltuions are separated and the rhenium values are separated from the organic phase, the improvement comprising:

(a) providing an organic extractant solution consisting essentially of from at least 0.05 percent to about 0.1 percent by volume of a quaternary ammonium compound of the formula $[R_3(CH_3)N]^+A^-$, wherein R is an alkyl group having from about 8 to 10 carbon atoms and A is an anion derived from a mineral acid as the active extracting agent and at least 50 percent by volume of an aromatic solvent having as its major constituents, a mixture of alkyl benzenes having molecular weights of either 106, 120, 134 or 148, minor constituents of aliphatic hydrocarbons containing more than 8 carbon atoms and naphthalene, and contacting said organic extractant with an aqueous solution containing molybdenum and rhenium values, wherein the ratio of concentration of rhenium to the concentration of molybdenum is from about 1:2000 to about 1:3000 and the concentration of rhenium is below about 50 mg/liter,

(b) stripping essentially all of the rhenium value from said extractant after the aqueous solution has been contacted by said extractant and the organic and aqueous have been separated, and

(c) continuously recycling said extractant solution to extract further rhenium values without a substantial loss in extraction capacity.

4,185,079

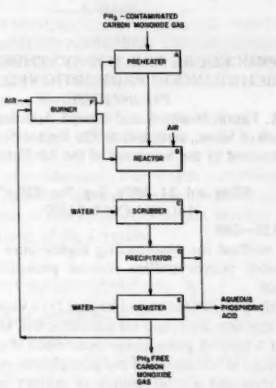
REMOVAL OF PHOSPHINE CONTAMINANT FROM CARBON MONOXIDE GAS MIXTURES

Theodore F. Munday, Kendall Park; David Goldstein, East Brunswick, and John Walden, Hightstown, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jun. 8, 1978, Ser. No. 913,785

Int. Cl.[2] B01D *53/34;* **C01B** *25/12*

U.S. Cl. 423—210 **11 Claims**



1. A method for preferentially removing phosphine from off-gas generated in the electric furnace production of elemental phosphorus, which off-gas is a gas mixture essentially free of elemental phosphorus and containing at least 85% by volume carbon monoxide and containing phosphine in an amount less than 1% by volume which comprises:

(a) preheating the carbon monoxide gas mixture to a temperature of about 500° C.;

(b) introducing an amount of oxygen into the gas mixture sufficient to oxidize the phosphine to phosphorus pentoxide;

(c) maintaining the gas mixture in a reaction zone at a temperature of from about 500° C. to about 800° C. for a period of time sufficient to oxidize the phosphine to phosphorus pentoxide without substantial concurrent oxidation of the carbon monoxide; and

(d) recovering the entrained phosphorus pentoxide reaction product from the gas mixture.

4,185,080

METHOD OF REDUCING THE SULFUR OXIDE CONTENT OF COMBUSTION GASES RESULTING FROM COMBUSTION OF SULFUR-CONTAINING FOSSIL FUELS

Helmuth Rechmeier, Balingen, Fed. Rep. of Germany, assignor to Rudolf Rohrbach and Gerhard Rohrbach, both of Dotternhausen, Fed. Rep. of Germany

Filed Aug. 2, 1978, Ser. No. 930,383

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735436

Int. Cl.[2] C01B *17/00*

U.S. Cl. 423—242 **20 Claims**

1. Method of reducing the sulfur oxide content of combustion gas resulting from the combustion of a sulfur-containing fossil fuel, comprising the steps of: (a) effecting combustion of said fossil fuel in a combustion zone in the presence of a carbonate selected from the group consisting of calcium carbonate and calcium magnesium carbonate whereby an oxide selected from the group consisting of calcium oxide and calcium magnesium oxide is produced from said carbonate and whereby sulfur oxides produced by said combustion react with a portion of said oxide to form a sulfate selected from the group consisting of calcium sulfate and calcium magnesium sulfate, the remaining portion of said oxide being unreacted; (b) removing said sulfate and said unreacted oxide from said combustion zone; (c) removing said unreacted oxide from said sulfate; (d) slaking with water said removed oxide to form a hydroxide selected from the group consisting of calcium hydroxide and calcium magnesium hydroxide; and (e) introducing said hydroxide to said combustion zone or to said combustion gas emanating from said combustion zone.

4,185,081

PROCEDURE FOR THE SYNTHESIS OF STOICHIOMETRIC PROPORTIONED INDIUM PHOSPHIDE

Thomas A. Fauth, Bedford, and Joseph A. Adamski, Framingham, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 31, 1978, Ser. No. 929,470

Int. Cl.[2] C01B *25/00*

U.S. Cl. 423—299 **2 Claims**

1. In a method for synthesizing highly pure stoichiometric porportioned, polycrystalline indium phosphide comprising the steps of:

I. providing a reaction vessel having (1) a vaporization zone, (2) a reaction zone, and (3) a constricted, interconnecting, vapor transport passageway positioned therebetween;

II. placing a solid sample of red phosphorus in said vaporization zone and a solid sample of indium in said reaction zone;

III. heating the vaporization zone to a temperature and pressure sufficient to vaporize said red phosphorus and effect its transport to said reaction zone;

IV. simultaneously heating said reaction-zone to melt said indium and effect a reaction between said phosphorus vapors and said molten indium;

V. maintaining said temperatures for a period of time sufficient to complete said reaction and produce a stoichiometric proportioned, reaction product therefrom; and

VI. cooling said reaction product and removing said product from said reaction vessel, the improvement which comprises the steps of:

(a) heating said vaporization zone to a temperature of 546° C. and a resulting vapor pressure of 27.5 atmospheres,

(b) heating said reaction zone to a temperature between a range of 1070° C. and 1150° C. and maintaining the entire reaction zone within said temperature range during the entirety of said reaction;

(c) cooling the temperature of said reaction product from its maximum to a temperature between 950° and 1000° C. at a programmed variable cooling rate ranging from 50° C. per hour to 150° C. per hour; while simultaneously maintaining the temperature at the red phosphorus interface at 546° C.

(d) simultaneously cooling the temperature of both the reaction product and the red phosphorus at programmed, variable cooling rates ranging from 60° C. per hour to 150° C. per hour and 90° C. per hour to 180° C. per hour, respectively;

(e) continuing said programmed cooling until the temperature of the red phosphorus reaches about 380° C. and the indium phosphide reaches about 750° C., respectively; and

(f) further cooling said red phosphorus and indium phosphide in situ to room temperature.

4,185,082

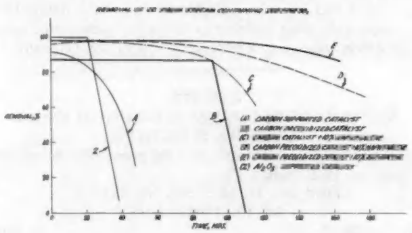
CATALYTIC CARBON FOR OXIDATION OF CARBON MONOXIDE IN THE PRESENCE OF SULFUR DIOXIDE

Rabindra K. Sinha, Corapolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Division of Ser. No. 832,043, Sep. 9, 1977, which is a continuation-in-part of Ser. No. 705,649, Jul. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 557,209, Mar. 12, 1975, abandoned. This application May 11, 1978, Ser. No. 904,963

Int. Cl.[2] C01B *31/20;* **B01D** *53/34*

U.S. Cl. 423—437 **4 Claims**



1. A method of oxidizing carbon monoxide to carbon dioxide in the presence of sulfur dioxide comprising contacting the carbon monoxide with an activated carbon supported catalyst, produced by an improved method comprising the step of impregnating an activated carbon support with a catalyst composition comprising one or more members selected from the group consisting of Cu, Cr, Ni, Fe, Mn, Au, Ag, Pt, Pd, Rh and oxides, chloride, hydroxide, carbonate and nitrate salts thereof,

the improvement comprising using an activated carbon oxidatively modified by heating said activated carbon support with a fluid oxidizing agent prior to impregnating thereof with said catalyst, whereby oxygen is added to the surface of said activated carbon support in an amount of from about 1% to about 5% by weight of said activated carbon support and the reducing properties of said activated carbon support are substantially reduced,

provided that, where the oxidizing agent is an oxyacid, that the acid is employed in a concentration of from 1 to 15 weight %, and in an amount, expressed as a weight ratio of acid to activated carbon, of from 1:1 to 5:1, whereby weight loss from the activated carbon as a result of acid treatment does not occur,

and, second, impregnating said activated carbon support with an inert hydrophobic compound in an amount of from about 1% to about 20% by weight of said activated carbon, before the step of impregnating said activated carbon support with said catalyst composition,

said improvement resulting in an activated carbon supported catalyst having improved efficiency in the presence of sulfur dioxide.

4,185,083

MANUFACTURE OF FINELY DIVIDED CARBON

David G. Walker, Baytown, Tex., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Apr. 21, 1978, Ser. No. 898,624
Int. Cl.[2] C01B *31/02*; C09C *1/48*; C10J *3/00*
U.S. Cl. 423—449 **9 Claims**

1. A method for the production of carbon in finely divided form which comprises

a. introducing coal, air and a mixture containing carbon dioxide and carbon monoxide into a slagging ash gasifier in the upper portion of which tar, oil and sulfur are volatilized from the coal and a low temperature coke is produced, and in the lower portion of which carbon monoxide and molten slag are produced,

b. removing volatilized tar, oil and sulfur from the top of the gasifier,

c. removing molten slag from the bottom of the gasifier,

d. removing a gaseous stream comprising principally carbon monoxide and nitrogen from an intermediate point of the gasifier,

e. separating a stream consisting essentially of carbon monoxide from said gaseous stream,

f. disproportionating said stream of carbon monoxide whereby a mixture of carbon in finely divided form and a gaseous mixture containing carbon dioxide and carbon monoxide are produced,

g. separating the carbon from the gaseous mixture containing carbon dioxide and carbon monoxide and

h. introducing the mixture containing carbon dioxide and carbon monoxide into said slagging ash gasifier.

4,185,084

IMMUNOCHEMICAL MEASURING METHOD USING SECOND ANTIGENIC SUBSTANCE

Ei Mochida, Tokyo; Nobuhisa Ogawa, Omiya; Hiroyuki Shinkai, Kawagoe, and Masakatsu Hashimoto, Tokyo, all of Japan, assignors to Mochida Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1977, Ser. No. 838,846
Claims priority, application Japan, Oct. 7, 1976, 51-120623
Int. Cl.[2] A61K *27/04*
U.S. Cl. 424—1 **9 Claims**

1. An immunochemical measuring method comprising the steps of

(a) reacting an antibody to an antigen to be measured (Ab 1) with an antigen to be measured (Ag 1) and a conjugate coupled with said antigen to be measured to a second antigen having strong antigenicity (Ag 1-Ag 2),

(b) separating the Ab 1-Ag 2 complex produced by the above reaction from the reaction mixture,

(c) reacting the separated Ab 1-Ag 1-Ag 2 complex with a labeled antibody to the second antigen (Ab 2),

(d) separating the reaction products of Ab 1-Ag 1-Ag 2-labeled Ab 2 complex produced by the above reaction from the reaction mixture, and

(e) measuring either the activity of a labeling agent bound to the above reaction products or of a labeling agent remaining in the reaction mixture.

4. Immunochemical measuring method of claim **1**, wherein the labeling agent is selected from the group consisting of radioisotope, enzyme or fluorescent material.

4,185,085

DIFFERENTIAL DIAGNOSTIC SPERM EXAMINATION

Carsten A. Carstensen, Heuchelheim, Fed. Rep. of Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 13, 1977, Ser. No. 842,003
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1976, 2651060
Int. Cl.[2] G01N *1/30, 21/60*
U.S. Cl. 424—3 **2 Claims**

1. A method for differential diagnostic sperm examination, comprising placing the specimen to be examined on a prestained blood-picture slide wherein the dye component of the prestained slide contains chromatographically pure new methylene blue and cresyl violet acetate in a ratio ranging from 1:1.5 to 1:5, developing the stain and examining same thereafter.

4,185,086

TALC COMPOSITIONS

Vernon Zeitz, Springfield, Vt., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed May 4, 1978, Ser. No. 902,638
Int. Cl.[2] A61K *7/035, 47/00*
U.S. Cl. 424—69 **4 Claims**

1. A talc powder composition consisting essentially of from about 0.01 to 1% by weight of the composition of perfume, from about 0.1 to 1% by weight of the composition of polyethylene glycol having a molecular weight of from about 100 to 1500 and the balance talc.

4,185,087

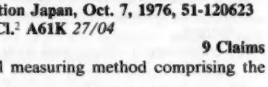
HAIR CONDITIONING COMPOSITIONS CONTAINING DIALKYLAMINO HYDROXY ORGANOSILICON COMPOUNDS AND THEIR DERIVATIVES

Robert J. Morlino, Port Chester, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 28, 1977, Ser. No. 865,128
Int. Cl.[2] A61K *7/06*
U.S. Cl. 424—70 **16 Claims**

1. A method of conditioning hair which comprises applying to said hair an effective amount of a composition containing:

(A) From about 0.1 to about 10.0 weight percent of at least one compound of the formula:



wherein:

R is a monovalent hydrocarbon radical having from 1 to 18 carbon atoms;

R′ is a divalent alkylene radical having 1 to 18 carbon atoms or a divalent hydrocarbonoxy radical having from 1 to 18 carbon atoms wherein the oxygen in said hydrocarbonoxy radical is in the form of an ether linkage and wherein the hydrocarbon portion of said hydrocarbonoxy radical is present in the form of divalent alkylene radicals;

X^- is halide anion;

x has an average value of from 2 to 20; and

y has an average value of from 20 to 200;

(B) From about 75 to about 99.9 percent water; and

(C) From about 0 to about 30 weight percent of one or more amphoteric, cationic, anionic, non-ionic, polar non-ionic or zwitterionic surfactants.

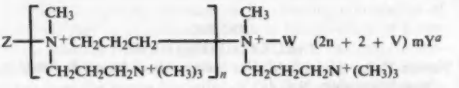
4,185,088

NON-ADHESIVE IONENE QUATERNARY POLYMER COMPOSITIONS USEFUL AS BILE ACID SEQUESTRANTS

Arthur F. Wagner, Princeton, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 769,491, Feb. 17, 1977, abandoned. This application Oct. 19, 1978, Ser. No. 953,053
Int. Cl.[2] A61K *31/74*
U.S. Cl. 424—78 4 Claims

1. A bile acid sequestrant composition characterized as being non-adhesive and free-flowing after prolonged exposure to air at 35% relative humidity, which comprises a substantially uniform adsorbate of an ionene quaternary polymer on a fumed silica or silica aerogel, said polymer and silica having a weight:weight ratio of approximately 1:1, said ionene quaternary polymer having the following formula:



wherein n is the number of repeating units in the polymer; Y is a mono- or poly-valent, pharmacologically acceptable anion, a is the anionic charge on Y, and m is the reciprocal of a; W is propyl, hydroxypropyl, allyl, alkoxypropyl, halopropyl, ammoniopropyl, alkylammoniopropyl, dialkylammoniopropyl, or trialkylammoniopropyl; Z is allyl, N-trimethylammoniopropyl-N-methyl-3-aminopropyl, N-trimethylammoniopropyl-N,N-dimethyl-3-ammoniopropyl, halopropyl, ammoniopropyl, alkylammoniopropyl, dialkylammoniopropyl or trialkylammoniopropyl; and V is the number of positively charged nitrogens (N^+) in the W and Z groupings, which is produced by the process which comprises forming a substantially uniform suspension of a fumed silica or silica aerogel in an aqueous solution of said ionene quaternary polymer, evaporatively removing water from this suspension, and drying the adsorbate thus produced.

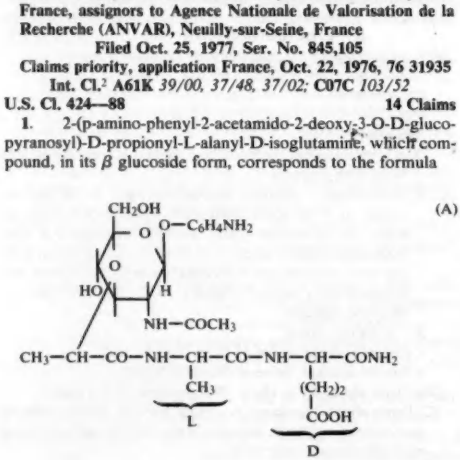
4,185,089

IMMUNOLOGICAL ADJUVANT CONSTITUTED BY THE P-AMINO-PHENYL DERIVATIVE OF N-ACETYL-MURAMYL-L-ALANYL-D-ISOGLUTAMINE

Marcel Derrien, Rambouillet; Edgar Lederer, Sceaux; Francoise M. Audibert, Neuilly-sur-Seine; Louis Chedid; Jean Choay, both of Paris, and Pierre Lefrancier, Bures-sur-Yvette, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Oct. 25, 1977, Ser. No. 845,105
Claims priority, application France, Oct. 22, 1976, 76 31935
Int. Cl.[2] A61K *39/00, 37/48, 37/02;* C07C *103/52*
U.S. Cl. 424—88 14 Claims

1. 2-(p-amino-phenyl-2-acetamido-2-deoxy-3-O-D-glucopyranosyl)-D-propionyl-L-alanyl-D-isoglutamine, which compound, in its β glucoside form, corresponds to the formula



(A)

4,185,090

CHEMICALLY MODIFIED ENDOTOXIN IMMUNIZING AGENT

Floyd C. McIntire, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 468,624, May 9, 1974, Pat. No. 4,057,685, which is a continuation of Ser. No. 223,012, Feb. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 147,686, May 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 20,834, Mar. 18, 1970, abandoned, which is a continuation-in-part of Ser. No. 784,174, Dec. 16, 1968, abandoned. This application Jun. 17, 1977, Ser. No. 807,758
Int. Cl.[2] A61K *31/73;* C07H *5/06;* C08B *37/00*
U.S. Cl. 424—92 5 Claims

1. An ingredient for an immunizing agent comprising a protein antigen covalently coupled to a bacterial endotoxin partially detoxified lipopolysaccharide, said protein antigen having available —SH, imidazole or $—NH_2$ groups and said lipopolysaccharide having free amino groups.

4,185,091

USE OF AVILAMYCIN AS A FEED ADDITIVE

Fritz Knusel, Zofingen; Jakob Nuesch, Arlesheim; Heinrich Peter, Binningen, and Armel Rosselet, Fribourg, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 22, 1978, Ser. No. 908,499
Claims priority, application Switzerland, May 26, 1977, 6494/77
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—118 4 Claims

1. A method for promoting the growth of a domestic or productive animal which comprises administering to an animal in need of said promoting fodder containing from 1 to 500 ppm of avilamycin.

4,185,092

PURIFICATION OF NYSTATIN IN AN AQUEOUS SYSTEM

Julio Metzger, Humacao, P.R., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 3, 1977, Ser. No. 839,075
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—123 6 Claims

1. A process for the purification of a crude, partially purified or contaminated, substantially non-crystalline nystatin which comprises:

(i) forming an aqueous solution of nystatin by combining the nystatin starting material with water and an anionic surfactant;

(ii) combining a chlorinated hydrocarbon solvent with the aqueous nystatin solution; and

(iii) precipitating purified amorphous nystatin by adding an acid-addition salt of a mineral acid and a water-soluble amine.

4,185,093

PREPARATION AND METHOD FOR TREATMENT OF HYPOCALCEMIA, HYPOPHOSPHATEMIA AND DOWNER COW SYNDROME IN ANIMALS

Allen R. Carnes, 313 W. 2nd St., and Douglas D. Mann, RFD 3, both of New Richmond, Wis. 54017

Continuation of Ser. No. 815,492, Jul. 14, 1977, abandoned. This application Jun. 19, 1978, Ser. No. 916,947
Int. Cl.[2] A61K *33/14, 33/06, 31/19*
U.S. Cl. 424—153 12 Claims

1. An aqueous solution containing from about 7 to 28 grams of dissolved calcium per 1000 cc in the form of a water soluble mixture of calcium chloride, calcium lactate and calcium levulinate, wherein 10% to 30% of the dissolved calcium is pro-

vided by calcium chloride, 20% to 60% thereof by calcium lactate and 20% to 60% thereof by calcium levulinate.

2. A method of treating milk fever and downer cow syndromes in cattle comprising administering by intravenous injection a therapeutically effective dose of an aqueous solution containing from 7 to 28 grams of dissolved calcium per 500 cc's in the form of a water soluble mixture of calcium chloride, calcium lactate and calcium levulinate, in such proportions that the calcium chloride provides from about 10 percent to about 30 percent of the calcium, the calcium lactate provides from about 20 percent to about 60 percent of the calcium, and the calcium levulinate provides from about 20 percent to about 60 percent of the calcium.

4,185,094

BIOCIDAL COMPOSITION

Ronald A. Crump, Horsham, England, assignor to The British Petroleum Company Limited, London, England

Filed Sep. 2, 1977, Ser. No. 830,314

Claims priority, application United Kingdom, Sep. 9, 1976, 37377/76

Int. Cl.[2] **B05D** *3/02;* **B32B** *9/04;* **A01N** *9/00, 9/24*

U.S. Cl. 424—172 **11 Claims**

1. A film-forming wax composition containing from 2 to 20% by wt of organo-tin groups by weight of finished coating suitable for use as a marine anti-fouling coating containing an organo-tin ester of an oxidised wax or a aliphatic fatty acid, wherein the organo-tin radical of the ester having the formula

$$R_3Sn-$$

where R is a hydrocarbyl group having from 1 to 10 carbon atoms selected from the group consisting of alkyl, cyclo-alkyl and aryl groups.

3. A method of protecting an underwater surface from marine fouling comprising coating the surface with a film of a film-forming wax composition as claimed in claim 1.

4,185,095

NERVE GROWTH FACTOR

David M. Young, Sherborn, Mass., assignor to The Massachusetts General Hospital, Boston

Filed Nov. 23, 1977, Ser. No. 854,194

Int. Cl.[2] **A61K** *35/12, 37/02;* **C07G** *7/00*

U.S. Cl. 424—177 **3 Claims**

1. A composition useful as plasminogen activator comprising a nerve growth factor having a molecular weight of about 116,000, said composition being derived from either mouse submandibular gland or from mouse saliva which composition is free from the components of mouse saliva or mouse gland which degrade the nerve growth factor.

4,185,096

NOVEL DERIVATIVES OF PEPSTATIN, THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Bertrand Castro, Messein; Jöel Menard, Paris; Geneviéve Evin, Nancy, and Pierre Corvol, Paris, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly Sur Seine, France

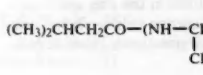
Filed Jul. 31, 1978, Ser. No. 929,562

Claims priority, application France, Aug. 4, 1977, 77 24093

Int. Cl.[2] **A61K** *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **10 Claims**

1. A pepstatin derivative having the formula



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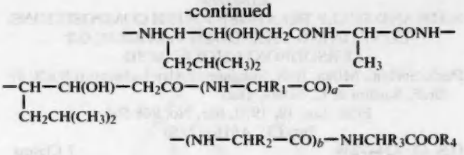


wherein R_1, R_2 and R_3 are each a side chain from an amino-acid selected from the group consisting of arginine, glutamic acid, aspartic acid, lysine, histidine and valine; R_4 is H or C_1–C_4 alkyl; and a and b are each zero or 1, the sum of a plus b being equal to 0, 1 or 2; and their salts with solubilizing bases.

4,185,097

METHOD OF COMBATING HERPES SIMPLEX VIRUSES WITH LIGNOSULFONATES

John W. Ward, and Robert W. Tankersley, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Filed Jan. 9, 1978, Ser. No. 868,010

Int. Cl.[2] **A61K** *35/78, 31/185*

U.S. Cl. 424—195 **1 Claim**

1. A method of treating viral infections caused by Herpes simplex, Types I and II, viruses which consist of topically administering to infected tissue of a living animal body under attack by said viruses a lignosulfonate in an amount effective for controlling said viruses and reducing the extent of the infection caused by said viruses.

4,185,098

DISINFECTANT

Ulrich Cuntze, Hofheim am Taunus; Wolfgang Raether, Dreieich; Bernhard Reul, Konigstein, and Gerhard Ross, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

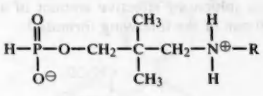
Filed Apr. 13, 1977, Ser. No. 787,205

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616713

Int. Cl.[2] **A01N** *9/02, 9/20, 9/30, 9/36*

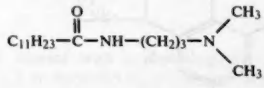
U.S. Cl. 424—199 **5 Claims**

1. A disinfecting composition containing as its essential active ingredient an effective disinfecting amount of a mixture of a compound of the formula:



(a)

and a compound of the formula:



(b)

said mixture containing 0.2 to 0.9 mols of the compound of formula (b) per mol of the compound of formula (a) and R of formula (a) being an alkyl radical of coconut fatty acid.

4,185,099

HAIR AND SCALP TREATMENT WITH COMPOSITIONS CONTAINING CHENODEOXYCHOLIC OR URSODEOXYCHOLIC ACID

Paolo Sorbini, Milan, Italy, assignor to Also Laboratori S.a.S. di Dr.P. Sorbini & C, Milan, Italy

Filed Jan. 10, 1978, Ser. No. 868,563
Int. Cl.[2] A61K *31/56*
U.S. Cl. 424—238 **7 Claims**

1. A cosmetic composition comprising an amount effective to treat dandruff of chenodeoxycholic acid, ursodeoxycholic acid, or a cosmetically acceptable salt or derivative thereof; a cosmetically acceptable carrier; and an amount of a cell proliferation stimulating substance which is effective to stimulate cell proliferation.

4,185,100

TOPICAL ANTI-INFLAMMATORY DRUG THERAPY

David T. Rovee, Somerset; John R. Marvel, and James A. Mezick, both of East Brunswick, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 685,942, May 13, 1976, abandoned. This application Apr. 20, 1977, Ser. No. 788,453
Int. Cl.[2] A61K *31/38, 31/56*
U.S. Cl. 424—240 **23 Claims**

1. A method of topical treatment of an inflammatory condition of the skin comprising applying to the affected area a non-steroidal anti-inflammatory agent which is a hydratropic acid derivative selected from the group consisting of suprofen, cliprofen, cicloprofen, fenoprofen, flurbiprofen, ibuprofen, ketoprofen, naproxen and pirprofen, and, concurrently therewith, a topically active anti-inflammatory corticosteroid, each of said hydratropic acid derivative and said corticosteroid being applied in a pharmaceutically acceptable topical vehicle selected from the group consisting of creams, gels, ointments, powders, aerosols, and solutions suitable for topical administration, the amounts of said anti-inflammatory drugs being sufficient, in combination, to combat said inflammatory condition.

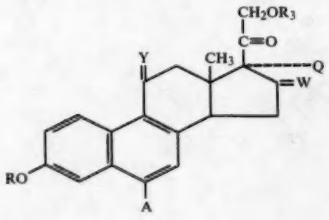
4,185,101

1,3,5(10),6,8-19-NOR-PREGNAPENTAENES, THEIR USE AS ANTI-PSORIATIC AGENTS, AND PHARMACEUTICAL FORMULATIONS USEFUL THEREFOR

Richard W. Draper, North Caldwell; Michael J. Green, Kendall Park, and Charles J. Casmer, Rahway, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 823,573, Aug. 11, 1977, abandoned. This application Jul. 18, 1978, Ser. No. 925,725
Int. Cl.[2] A61K *31/56*; C07J *5/00*
U.S. Cl. 424—243 **10 Claims**

1. The method of eliciting a mitotic inhibitory response in a warm-blooded animal having a disease characterized by rapid cell proliferation which comprises administering to said animal a non-toxic, mitotic inhibitory effective amount of a 19-norpregnapentaene-20-one of the following formula I:



I

wherein

A is hydrogen, lower alkyl, fluoro, fluoromethyl, difluoromethyl, or trifluoromethyl;

R is hydrogen, lower alkyl, or an acyl radical of a hydrocarboncarboxylic acid having up to 20 carbon atoms;

Y is (H,H), (H,OH), or oxygen,

W is (H,H); (H, lower alkyl); (Hα-hydroxy); (H,α-OR_1), wherein R_1 is an acyl radical of a hydrocarboncarboxylic acid having up to 20 carbon atoms; or =CHT wherein T is hydrogen, lower alkyl, fluorine, or chlorine;

Q is OR_2 wherein R_2 is hydrogen or an acyl radical of a hydrocarboncarboxylic acid having up to 20 carbon atoms; hydrogen provided W is (H,H), or (H, lower alkyl); or Q and W together is a $\neq\alpha$,17α-lower alkylidenedioxy;

R_3 is hydrogen or an acyl radical of a hydrocarboncarboxylic acid having up to 20 carbon atoms; or OR_3 together with Q is a member selected from the group consisting of alkylidenedioxy and alkylorthoalkanoate;

and when Q is hydroxy and R_3 is hydrogen, the 17α,20;20,21-bismethylenedioxy derivatives thereof;

together with a non-toxic pharmaceutically acceptable carrier.

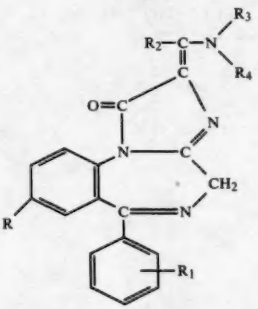
4,185,102

1,2-DIHYDRO-6-PHENYL-1H,4H-IMIDAZOBENZODIAZEPIN-1-ONES

John B. Taylor, Down Ampney, Nr. Cirencester, and Derek R. Harrison, Swindon, both of England, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 791,845, Apr. 28, 1978, Pat. No. 4,134,976, which is a division of Ser. No. 658,301, Feb. 17, 1976, Pat. No. 4,044,142. This application Oct. 18, 1978, Ser. No. 952,494
Claims priority, application United Kingdom, Nov. 4, 1975, 45800/75; Feb. 15, 1978, 6509/78
Int. Cl.[2] A61K *31/55*; C07D *471/04*
U.S. Cl. 424—246 **6 Claims**

1. A compound selected from the group consisting of 1,2-dihydro-6-phenyl-1H,4H-imidazol-[1,2-a][1,4]-benzodiazepin-1-ones of the formula



wherein R is selected from the group consisting of hydrogen, halogen, nitro and trifluoromethyl, R_1 is selected from the group consisting of hydrogen and halogen, R_2 is selected from the group consisting of hydrogen and methyl and R_3 and R_4 taken together with the nitrogen atom to which they are attached form a heterocycle selected from the group consisting of morpholino and thiomorpholino optionally substituted with at least one member of the group consisting of alkyl of 1 to 5 carbon atoms, hydroxyalkyl of 1 to 5 carbon atoms, dialkylphosphinylalkyl with 1 to 5 carbon atoms in the alkyl groups, cycloalkylalkyl with 3 to 6 carbon atoms in the ring and 1 to 5 alkyl carbon atoms, alkenyl of 2 to 5 carbon atoms, phenyl and 1-phenyl-5-imidazolyl-4-one, and their non-toxic, pharmaceutically acceptable acid addition salts.

4,185,103
PHARMACOLOGICALLY ACTIVE TRIAZINONES

Thomas H. Brown, Welwyn Garden City, and Robert J. Ife, Stevenage, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

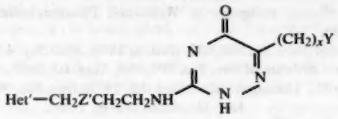
Filed Mar. 13, 1978, Ser. No. 885,940

Claims priority, application United Kingdom, Mar. 19, 1977, 11757/77; Mar. 21, 1977, 11828/77

Int. Cl.[2] C07D *253/06;* A61K *31/53*

U.S. Cl. 424—249 18 Claims

1. A compound of the formula:



wherein Het' is a 2- or 4-imidazolyl ring optionally substituted by lower alkyl, halogen, trifluoromethyl or hydroxymethyl, a 2-pyridyl ring optionally substituted by one or two groups selected from lower alkyl, lower alkoxy, halogen, amino and hydroxy, a 2-pyridyl ring with a phenyl, carbocyclic or cyclic ether ring containing 2 oxygen atoms fused to it, a 2-thiazolyl ring, a 3-isothiazolyl ring optionally substituted by chlorine or bromine, a 3-(1,2,5)-thiadiazolyl ring optionally substituted by chlorine or bromine, or a 2-(5-amino-1,3,4-thiadiazolyl)ring; Z' is sulphur or a methylene group; x is 1 to 5; Y is a 1- or 2-naphthyl ring, a 2,3-dihydro-1,4-benzodioxinyl or a 1,3-benzodioxolyl ring, a phenyl ring substituted with one or more lower alkyl, lower alkoxy, halogen, benzyloxy, hydroxy, loweralkoxyloweralkoxy, trifluoromethyl, di(lower alkyl)amino, phenoxy, halophenoxy, lower alkoxyphenoxy, phenyl, halophenyl or lower alkoxyphenyl groups, a 5 or 6 membered heterocycle selected from the group consisting of a pyridine, furan, thiophen, thiazole, oxazole, isothiazole, imidazole, pyrimidine, pyrazine or pyridazine ring, which ring is optionally substituted by lower alkyl, lower alkoxy, or Y is a pyridine, imidazole or thiazole ring which has a benzene ring fused to it, or when x is other than 1, Y may also be phenyl; or a pharmaceutically acceptable salt thereof.

14. A pharmaceutical composition comprising a compound of claim 1 in combination with a pharmaceutically acceptable diluent or carrier.

4,185,104
TRANQUILLIZING COMPLEXES

Philippe Gold-Aubert, and Diran Melkonian, both of Geneva, Switzerland, assignors to Sapos S.A., Geneva, Switzerland

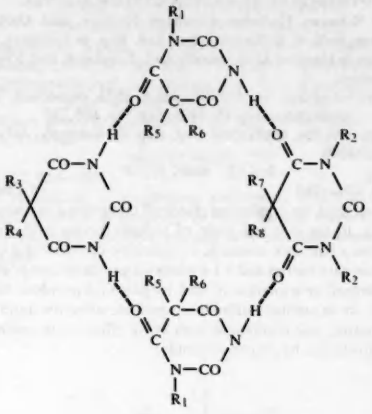
Filed Oct. 28, 1977, Ser. No. 846,370

Claims priority, application United Kingdom, Nov. 1, 1976, 45263/76

Int. Cl.[2] A61K *31/515;* C07D *239/62*

U.S. Cl. 424—254 12 Claims

1. A tranquillising complex exhibiting anti-tremor activity of the structure (I)



(I)

wherein R_1 and R_2, which are the same or different, each represent a group of the formula —CH_2 CHAB, in which A is a hydrogen atom and B a hydroxyl group; or A is a group of the formula —CH_2OX wherein X is a hydrogen atom or C_{1-5} alkyl, and B is a group of the formula —OY wherein Y is a hydrogen atom or carbamoyl or carboalkoxy, and R_3, R_4, R_5, R_6, R_7 and R_8, which are the same or different, each represent a hydrogen atom, C_{2-5} alkyl or alkenyl, or phenyl, the dotted lines representing hydrogen bonding.

6. A pharmaceutical composition comprising an effective amount of a complex of structure (I) as claimed in claim 1 together with a pharmaceutical carrier, diluent or excipient.

4,185,105
4-PHENYL-8-AMINO-TETRAHYDROISOQUINOLINES AND ANTIDEPRESSANT USE

Karl Schmitt; Irmgard Hoffmann, both of Bad Soden am Taunus, and Ulrich Schacht, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

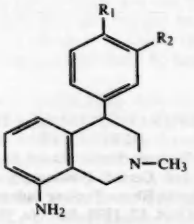
Filed May 30, 1978, Ser. No. 910,781

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2724610

Int. Cl.[2] A61K *31/47;* C07D *217/02*

U.S. Cl. 424—258 5 Claims

1. A 4-phenyl-8-amino-tetrahydroisoquinoline of the formula



and a salt thereof with a physiologically tolerated acid, wherein R_1 is bromine and R_2 is hydrogen or both R_1 and R_2 are chlorine.

5. A method of treatment which comprises administering to a patient suffering depression an effectively anti-depressive amount of a compound defined in claim 1.

4,185,106
PYRIDONES AS ANTIDANDRUFF AGENTS

Walter Dittmar, Hofheim; Eberhard Futterer, and Gerhard Lohaus, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

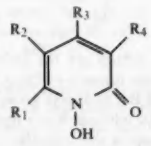
Continuation of Ser. No. 377,440, Jul. 9, 1973, abandoned. This application Aug. 15, 1975, Ser. No. 605,210

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1972, 2234009

Int. Cl.[2] A61K *31/44*

U.S. Cl. 424—263 **8 Claims**

1. A method for combating dandruff comprising the step of applying, to the hair and scalp of humans having a dandruff condition, a hair care cosmetic composition comprising a cosmetic hair care carrier and a 1-hydroxy-2-pyridone compound, a salt thereof, or a mixture of said 1-hydroxy-2 pyridone with said salt, in an amount sufficient to provide effective antidandruff control, said compound both being effective in combating dandruff and having the formula



in which R_1 stands for hydrogen, alkyl of 1 to 17 carbon atoms, alkenyl of 2 to 17 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, bicycloalkyl of 7 to 9 carbon atoms, cycloalkyl-alkyl of 5 to 8 carbon atoms in the cycloalkyl group and of 1 to 4 carbon atoms in the alkyl group, the cycloalkyl groups being optionally substituted by at least one alkyl having 1 to 4 carbon atoms, phenyl, naphthyl, phenylalkyl with 1 to 4 carbon atoms in the alkyl portion, phenyl-alkenyl with 2 to 4 carbon atoms in the alkenyl portion, phenyl-oxy-alkyl or phenyl-thio-alkyl with 1 to 4 carbon atoms in the oxy-alkyl or thio-alkyl portion, benzhydryl, phenylsulfonyl-alkyl of 1 to 4 alkyl carbon atoms, furyl, or furyl-alkenyl of 2 to 4 alkenyl carbon atoms, the phenyl and naphthyl groups being further optionally substituted with alkyl of 1 to 4 carbon atoms, with alkoxy of 1 to 4 carbon atoms, with nitro, with cyano, or with halogen; R_2 stands for hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkinyl of 2 to 4 carbon atoms, halogen, or benzyl; R_3 stands for hydrogen, alkyl of 1 to 4 carbon atoms, or phenyl; and R_4 stands for hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, methoxy-methyl, halogen, or benzyl.

4,185,107
MEDICAMENTS CONTAINING A THIAZOLINE DERIVATIVE

Jean-Dominique Bourzat, Paris; Daniel Farge, Thiais; André Léger, Paris, and Gerard Ponsinet, Sucy-en-Brie, all of France, assignors to Rhone-Poulenc Industries, Paris, France

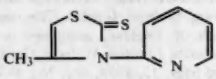
Filed Oct. 17, 1978, Ser. No. 952,199

Claims priority, application France, Oct. 19, 1977, 77 31430

Int. Cl.[2] A61K *31/44*

U.S. Cl. 424—263 **5 Claims**

1. A pharmaceutical composition useful for the treatment of a patient with gastritis, gastralgia or an ulcerous malady, which comprises an effective amount for a said treatment of 4-methyl-3-(pyrid-2-yl)-Δ^4-thiazoline-2-thione of the formula:



in association with a pharmaceutically-acceptable carrier.

4,185,108
ANTIOSTEOPOROTIC AGENTS

Carlos M. Samour, Wellesley, Mass., and Julius A. Vida, Greenwich, Conn., assignors to Westwood Pharmaceuticals Inc., Buffalo, N.Y.

Division of Ser. No. 866,930, Jan. 4, 1978, Pat. No. 4,125,621, which is a division of Ser. No. 795,560, May 10, 1977, Pat. No. 4,101,668. This application Sep. 15, 1978, Ser. No. 942,560

Int. Cl.[2] A61K *31/40*

U.S. Cl. 424—274 **8 Claims**

1. A process for the treatment of a host animal in order to modify the balance between the rate of bone resorption and the rate of bone deposition in said host animal whereby the ratio of said rate of bone resorption to said rate of bone deposition is reduced comprising administering to said host animal an amount sufficient to modify said balance and reduce said ratio of a compound having the formula:

wherein n has a value of zero or one, and provided that when n is zero, the COOH group is substituted on the ring carbon atom adjacent the —NH— group, or a non-toxic, pharmaceutically acceptable salt thereof.

4,185,109
1-BENZOTHIEPIN-4-CARBOXAMIDES

Melvin H. Rosen, Kendall, Fla., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 743,208, Nov. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 585,147, Jun. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 509,524, Sep. 26, 1974, abandoned. This application Nov. 23, 1977, Ser. No. 854,176

Int. Cl.[2] C07D *337/08;* A61K *31/38*

U.S. Cl. 424—275 **6 Claims**

1. N-(3,4-dichlorophenyl)-7-chloro-5-hydroxy-2,3-dihydro-1-benzothiepin-1,1-dioxide-4-carboxamide and its salts derived from a pharmaceutically useful base.

4,185,110
CERTAIN BENZOFURYL OR BENZOTHIENYL-2-GLYOXYLIC ACID COMPOUNDS

Kurt Eichenberger, Therwil; Hans Bosshard, Basel; Niklaus Buhler, Rheinfelden; Richard Goschke, Bottmingen, and Knut A. Jaeggi, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

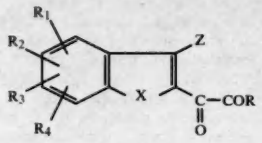
Filed Feb. 9, 1978, Ser. No. 876,380

Claims priority, application Luxembourg, Feb. 11, 1977, 76760

Int. Cl.[2] C07D *307/85;* A61K *31/34*

U.S. Cl. 424—275 **10 Claims**

1. A compound of the formula



(I)

in which Z is free or lower alkanoyloxy, X is thio or oxy, R is hydroxyl, hydroxy-lower alkoxy or lower alkoxy-lower alkoxy in which the two oxygen atoms are separated by 2 or 3 carbon atoms, R_1 is lower alkyl, cycloalkyl having 5 to 8 ring members, hydroxyl, lower alkoxy, phenoxy, phenoxy substituted by lower alkyl, lower alkoxy, halogen and/or nitro, amino, N-mono- or N,N-di-lower alkylamino, N-lower alkanoylamino, lower alkanoyl, benzoyl, benzoyl substituted by lower alkyl, lower alkoxy, halogen and/or nitro, carboxyl, halogen, nitro or, if Z is lower alkanoyloxy and/or X is oxy, hydrogen, R_2 is hydrogen, lower alkyl, hydroxyl or halogen and R_3 and R_4 are each hydrogen or lower alkyl with the proviso that R_1 is different from methyl bound in the 4-position when R_2 denotes methyl bound in 6-position, R_3 and R_4 are hydrogen, X denotes oxy and R represents ethoxy, or in which two adjacent radicals R_1, R_2, R_3 and R_4 together form lower alkylene having 3 to 5 chain carbon atoms or 1,4-butadienylene and the other two radicals are each hydrogen, or a pharmaceutically acceptable salt thereof.

10. A pharmaceutical composition comprising an anti-allergically effective amount of a compound as claimed in claim **1** together with a pharmaceutically acceptable carrier and/or adjuncts.

4,185,111

DAUNORUBICIN DERIVATIVES

Jean-Bernard Ducep, Paris; Daniel Farge, Thiais; Gerard Ponsinet, Sucy en Brie, and Daniel Reisdorf, Thiais, all of France, assignors to Rhone-Poulenc Industries, Paris, France

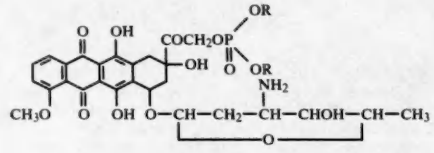
Filed Jul. 10, 1978, Ser. No. 923,448

Claims priority, application France, Jul. 11, 1977, 77 21272

Int. Cl.[2] **A61K** *31/35;* **C07D** *309/02*

U.S. Cl. 424—283 **7 Claims**

1. A daunorubicin derivative of the formula:



wherein each of the symbols R represents a hydrogen atom or a methyl or ethyl radical, and its non-toxic acid addition salts.

7. A pharmaceutical composition useful in the treatment of acute lymphoblastic and myeloblastic leukaemias and solid tumours which comprises, as active ingredient, an effective amount of a daunorubicin derivative as claimed in claim **1**, or a non-toxic acid addition salt thereof, in association with a compatible pharmaceutically acceptable carrier.

4,185,112

COMBATING ARTHROPODS WITH 2-SUBSTITUTED-CHROMAN-4-ONES

Hans-Joachim Kabbe, Leverkusen, and Peter Roessler, Berg.-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

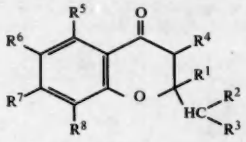
Filed Sep. 29, 1978, Ser. No. 947,285

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745306

Int. Cl.[2] **A01N** *9/28*

U.S. Cl. 424—283 **2 Claims**

1. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a chroman-4-one of the formula



wherein

R^1 to R^4, which need not be identical, each represent C_1–C_{18} alkyl, C_2–C_{18} alkenyl, C_3–C_{18} cycloalkyl, C_6–C_{14} aryl, aralkyl with 1 to 8 carbon atoms in the aliphatic part and 6 to 10 carbon atoms in the aromatic part, or alkoxycarbonyl with 1 to 18 carbon atoms in the alkyl part, any of these groups being optionally substituted by halogen, cyano, C_1–C_6-alkyl, C_1–C_6-alkoxy, (C_1–C_6-alkoxy)-carbonyl, (C_1–C_6-alkoxy)carbonyl(C_1–C_6-alkyl), amino, C_1–C_6-alkylamino, di-(C_1–C_6-alkyl)amino, aryl from the benzene series or a carboxylic acid group, or represent hydrogen, carboxyl or C_1–C_{18} aminoalkyl,

R^2 can alternatively represent amino or di-(C_1–C_{18}-alkyl-)amino which is optionally substituted by halogen, cyano, C_1–C_6-alkyl, C_1–C_6-alkoxy, (C_1–C_6-alkoxy)-carbonyl, (C_1–C_6-alkoxy)carbonyl(C_1–C_6-alkyl), amino, C_1–C_6-alkylamino, di-(C_1–C_6-alkyl)amino, aryl from the benzene series or a carboxylic acid group, or

R^1 and R^2 can, conjointly with the adjoining carbon atoms, form a 3-membered to 12-membered saturated or unsaturated carbocyclic ring, which can be fused to a benzene ring, or form a 5-membered to 12-membered heterocyclic ring containing carbon atoms and one or more heteroatoms selected from nitrogen, oxygen and sulphur atoms, which heterocyclic ring can optionally contain one or two double bonds and can optionally be fused on a benzene ring, and

R^5 to R^8, which need not be identical, each represent C_1–C_{18} alkyl, C_2–C_{18} alkenyl, C_3–C_{18} cycloalkyl, C_6–C_{14} aryl, aralkyl or aralkoxy with 1 to 8 carbon atoms in the aliphatic part and 6 to 10 carbon atoms in the aromatic part, C_1–C_{18} alkoxy, C_6–C_{14} aryloxy, alkoxycarbonyl with 1 to 18 carbon atoms in the alkyl part, C_1–C_{18} alkylamino or di-(C_1–C_{18}-alkyl)amino, any of these groups being optionally substituted by halogen, cyano, C_1–C_6-alkyl, C_1–C_6-alkoxy, (C_1–C_6-alkoxy)-carbonyl, (C_1–C_6-alkoxy) carbonyl(C_1–C_6-alkyl), amino, C_1–C_6-alkylamino, di-(C_1–C_6-alkyl)amino, aryl from the benzene series or a carboxylic acid group, or represent hydrogen, chlorine, hydroxyl, nitro, cyano, carboxyl, amino, aliphatic C_1–C_{18} acylamino or aromatic C_6–C_{14} acylamino.

4,185,113

STABILIZED METAL SALTS OF ETHYLENE BIS DITHIOCARBAMIC ACID

Aime Virrion, and Claude Franson, both of Marseilles, France, assignors to Roussel UCLAF, Paris, France

Continuation of Ser. No. 775,623, Mar. 8, 1977, abandoned. This application Sep. 7, 1978, Ser. No. 940,275

Claims priority, application France, Mar. 10, 1976, 76 06814

Int. Cl.[2] **A01N** *9/12, 9/20, 9/24;* **C07C** *155/00*

U.S. Cl. 424—286 **9 Claims**

1. A composition comprising a metal salt of ethylene bis dithiocarbamic acid selected from the group consisting of zinc and manganese and 0.1 to 10% by weight based on the metal salt of cinnamic aldehyde to stabilize the said metal salt.

4,185,114

SULFUR-CONTAINING N-BENZYLAMINO-ACIDS AND SALTS THEREOF

Henri Baille-Barrelle, La Chapelle en Serval; Maurice Vigneron, Paris, and Charles Lespagnol, Lambersart, all of France, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Fed. Rep. of Germany

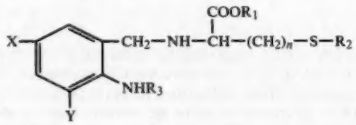
Filed Jun. 27, 1977, Ser. No. 810,087

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1976, 2628911

Int. Cl.[2] **C07C** *153/09, 149/43;* **A61K** *31/235, 31/195*

U.S. Cl. 424—301 **12 Claims**

1. A compound of the formula



wherein

X and Y are each hydrogen or halogen,

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms,

R_2 is hydrogen, alkyl of 1 to 3 carbon atoms, carboxy-lower alkyl or lower aliphatic carboxylic acyl,

R_3 is hydrogen or lower aliphatic carboxylic acyl, and

n is 1 or 2;

a non-toxic, pharmacologically acceptable acid addition salt thereof; or, when R_1 is hydrogen, a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

11. A mucolytic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective mucolytic amount of a compound of claim 1.

4,185,115

ANTILIPIDEMIC PARA-[ARYL(ALKYL OR ALKENYL)AMINO]-BENZOIC ACID DERIVATIVES

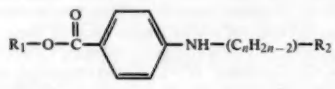
Jay D. Albright, Nanuet; Thomas G. Miner, Chester, and Robert G. Shepherd, South Nyack, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 12, 1975, Ser. No. 557,550

Int. Cl.[2] **A61K** *31/195, 31/245;* **C07C** *101/60, 101/62*

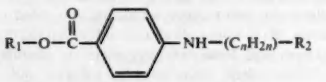
U.S. Cl. 424—310 **12 Claims**

1. A compound of the formula:



wherein n is an integer from 3 to 16, R_1 is hydrogen, lower alkyl, benzyl, di(lower alkyl)aminoethyl or lower alkoxyethyl, and R_2 is phenyl, 4-halophenyl, 2,4-dihalophenyl, 2,4,6-trihalophenyl, 4-(lower alkoxy)phenyl, 2,4-di(lower alkoxy)-phenyl, 2,4,6-tri(lower alkoxy)phenyl, 4-benzyloxyphenyl, 4-(lower alkyl)phenyl, 2,4-di(lower alkyl)phenyl, 2,4,6-tri(lower alkyl)phenyl, 1-naphthyl, 2-naphthyl or biphenyl; the pharmaceutically acceptable salts thereof and the alkali metal or organic base carboxylic acid salts thereof when R_1 is hydrogen.

5. A method of lowering serum lipid levels in mammals which comprises administering internally to said mammals a hypolipidemically effective amount of a compound of the formula:



wherein n is an integer from 1 to 16, R_1 is hydrogen, lower alkyl, benzyl, di(lower alkyl)aminoethyl or lower alkoxyethyl, and R_2 is phenyl, 4-halophenyl, 2,4-dihalophenyl, 2,4,6-trihalophenyl, 4-(lower alkoxy)phenyl, 2,4-di(lower alkoxy)-phenyl, 2,4,6-tri(lower alkoxy)phenyl, 4-benzyloxyphenyl, 4-(lower alkyl)phenyl, 2,4-di(lower alkyl)phenyl, 2,4,6-tri(lower alkyl)phenyl, 1-naphthyl, 2-naphthyl or biphenyl; the pharmaceutically acceptable salts thereof and the alkali metal or organic base carboxylic acid salts thereof when R_1 is hydrogen.

4,185,116

L- AND DL- PHENYLGLYCINES TO TREAT DISEASES OR CONDITIONS ATTRIBUTABLE TO REDUCED CARBOHYDRATE METABOLISM

Ian T. Barnish, Ramsgate; Peter E. Cross; John C. Danilewicz, both of Canterbury, and Malcolm Morville, Cliftonville, all of England, assignors to Pfizer Inc., New York, N.Y.

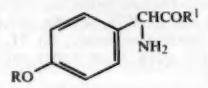
Division of Ser. No. 834,768, Sep. 19, 1977, Pat. No. 4,148,920. This application Aug. 30, 1978, Ser. No. 938,018

Claims priority, application United Kingdom, Sep. 28, 1976, 40306/76

Int. Cl.[2] **A61K** *31/24, 31/165, 31/195*

U.S. Cl. 424—319 **7 Claims**

1. A method of treating a mammalian subject suffering from a disease or condition attributable to reduced carbohydrate metabolism, which comprises orally or parenterally administering to said subject a carbohydrate metabolism increasing amount of the L- or DL- form of a compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen or methyl and R^1 is OH.

4,185,117

METHOD OF TREATMENT WITH GLYCINAMIDES

Ian T. Barnish, Ramsgate; Peter E. Cross; John C. Danilewicz, both of Canterbury, and Malcolm Morville, Cliftonville, all of England, assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 834,768, Sep. 19, 1977, Pat. No. 4,148,120. This application Aug. 29, 1978, Ser. No. 937,880

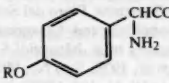
Claims priority, application United Kingdom, Sep. 28, 1976, 40306/76

Int. Cl.[2] **A61K** *31/24, 31/165, 31/195*

U.S. Cl. 424—324 **6 Claims**

1. A method of treating a mammalian subject suffering from a disease or condition attributable to reduced blood flow or oxygen availability which comprises orally or parenterally administering to said subject a blood flow or oxygen availabil-

ity increasing amount of the L- or DL- form of a compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R is hydrogen or methyl and R^1 is NH_2.

4,185,118

BENZOCYCLOALKYLAMIDES

Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

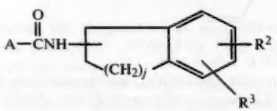
Continuation-in-part of Ser. No. 867,824, Jan. 9, 1978, abandoned. This application Jan. 12, 1979, Ser. No. 2,974

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1978, 2856856

Int. Cl.[2] A01N *3/24*; C09F *7/00*

U.S. Cl. 424—324 **18 Claims**

1. A compound of the formula:



wherein

A is the residue of a fatty acid minus the carboxylic function, and has from 7 to 23 carbon atoms and from 1 to 4 ethylenically unsaturated positions;

R^2 is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms,

R^3 is a hydrogen atom, alkoxy having from 1 to 3 carbon atoms, alkyl having from 1 to 3 carbon atoms, or chloro; and

j is a whole integer of from 1 to 4.

15. A method of reducing the cholesterol ester content of an arterial wall, in a mammal in need of such treatment, comprising administering a cholesterol ester-reducing amount of a compound of claim **1** to said mammal.

4,185,119

ANTIALLERGIC METHODS

Hiroyuki Kikuchi, Tokyo; Nobuo Kawaguchi, Kokubunji, and Hideaki Shiokawa, Asaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

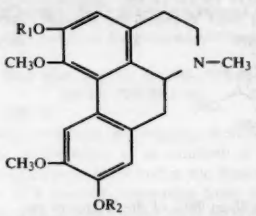
Filed May 30, 1978, Ser. No. 910,511

Claims priority, application Japan, May 30, 1977, 52-63739

Int. Cl.[2] A61K *31/47*

U.S. Cl. 424—258 **6 Claims**

1. A method of inhibiting the symptoms of a histamine-type allergic reaction in a mammal in need thereof which comprises administering to said mammal, a non-toxic, effective amount of a compound of the formula:



wherein R_1 and R_2 are each hydrogen or methyl, providing that when R_1 is hydrogen, R_2 is hydrogen; or a pharmaceutically acceptable acid addition thereof.

4,185,120

TOPICAL TREATMENT OF FUNGAL OR YEAST INFECTIONS USING P-TOLYL DIIODOMETHYL SULFONE

Robert A. Smith, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 2, 1978, Ser. No. 947,328

Int. Cl.[2] A61K *31/10*

U.S. Cl. 424—337 **7 Claims**

1. The method of treating fungal or yeast infections on the skin of a warm-blooded animal comprising applying topically to the skin area so afflicted an antifungally effective amount of p-tolyl diiodomethyl sulfone in a pharmaceutically acceptable carrier suitable for topical administration.

4,185,121

PROCESS FOR THE TREATMENT OF AN ACID HYDROLYSATE OF VEGETABLE MATTER AND THE PRODUCTS OBTAINED

Lienhard B. Huster, and Max Guggenbühler, both of Winterthur, Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Mar. 13, 1978, Ser. No. 885,688

Claims priority, application Switzerland, Mar. 17, 1977, 3334/77

Int. Cl.[2] A23L *1/27*, *1/221*

U.S. Cl. 426—250 **19 Claims**

1. A process for the treatment of an acid hydrolysate of vegetable matter for separating the hydrolysate into a dark coloured fraction and a light coloured fraction comprising contacting the hydrolysate with at least one semi-permeable membrane which is stable in an acidic medium under a pressure of from 4 to 50 Kg/cm^2 which produces a first lightly coloured liquid or permeate which passes through the membrane, the average colour intensity of which, measured by its extinction, is about one tenth of that of the hydrolysate, and a second strongly coloured liquid or retentate which does not pass through the membrane.

4,185,122

METHOD FOR INHIBITING THE FOAMING OF AQUEOUS SOLUTIONS CONTAINING A POLYMERIC DYE

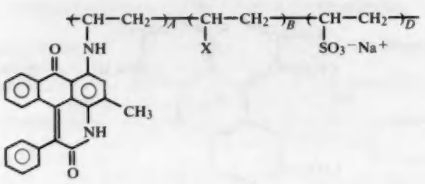
Thomas E. Furia, San Jose, Calif., assignor to Dynapol, Palo Alto, Calif.

Filed Aug. 8, 1978, Ser. No. 932,085

Int. Cl.[2] A23L *1/27*

U.S. Cl. 426—250 **12 Claims**

1. A method of preparing a substantially foam-free aqueous solution colored with a polymeric dye, which comprises admixing water and a polymeric dye having the structural formula



wherein about 80 to 98% of the X groups are

groups, the remaining X groups are free

groups and A+B+D equals about 900, with an effective foam-inhibiting amount of a foam-inhibitor selected from the group consisting of glycerol monooleate, glycerol dioleate, and a mixture of glycerol monooleate and glycerol dioleate.

4,185,123

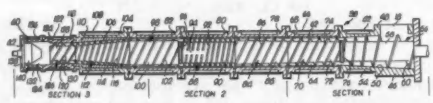
HIGH-OUTPUT METHOD FOR PRODUCING DENSE, UNIFORMLY LAYERED MEAT ANALOGUE PRODUCT

La Von G. Wenger; Douglas S. Clark, and Bobbie W. Hauck, all of Sabetha, Kans., assignors to Wenger Manufacturing, Sabetha, Kans.

Division of Ser. No. 816,005, Jul. 15, 1977, Pat. No. 4,118,164. This application Apr. 26, 1978, Ser. No. 900,071

Int. Cl.[2] A23J *3/00;* **A23P** *1/00*

U.S. Cl. 426—272 **10 Claims**



1. A method of producing a meat analogue product, comprising the steps of:

placing a hot, moist material comprising a vegetable protein and moisture into the barrel of an elongated extruder;

moving said material along the length of said barrel and causing the formation of a compacted mass of said material which presents a first choke of the material within the barrel;

thereafter moving said material away from said first choke and into a region within said barrel downstream therefrom, and causing said material to subdivide and form a plurality of relatively small, beadlet-like masses;

moving the subdivided material into a zone downstream of said region, and substantially uniformly heating and distributing moisture throughout the material, and causing the material to substantially recombine and form another compacted mass which presents a second choke within the barrel; and

extruding said recombined, compacted mass of material from said barrel to form a dense, layered meat analogue product.

4,185,124

2-(4-BIPHENYLYL)-N-(2-DIETHYLAMINO ALKYL)PROPIONAMIDE AND SALTS THEREOF USED AS SPASMOLYTIC AGENTS

Alberto Meli; Claudio Bianchini; Piero del Soldato; Mario Ghelardoni; Vittorio Pestellini, and Giovanna Volterra, all of Florence, Italy, assignors to A. Menarini S.A.S., Italy

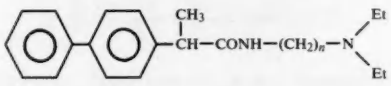
Filed May 11, 1978, Ser. No. 905,006

Int. Cl.[2] A61K *31/165;* **C07C** *103/20*

U.S. Cl. 424—324 **21 Claims**

1. A member selected from the group consisting of

(a) a compound of the formula

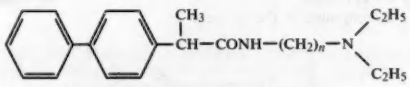


wherein n is 2 or 3, and Et is C_2H_5, and

(b) the non-toxic salts of (a).

16. Pharmaceutical composition wherein said composition comprises a non-toxic, inert vehicle or carrier, and a spasmolytic agent comprising a member selected from the group consisting of

(a) a compound of the formula



wherein n is 2 or 3, and

(b) the non-toxic salts of (a), said spasmolytic agent being employed in dosage units ranging from about 5 to about 40 mg.

4,185,125

METHOD OF FRYING RAW NOODLES IN A PERFORATED CONTAINER

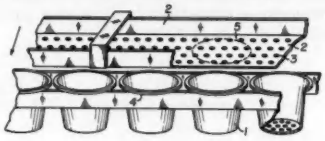
Sakuichi Sakakibara, Uozaki-Kita; Ko Sugisawa; Takashi Kimura, both of Nara; Teruo Yasukawa, Sakai, and Kikuo Matsushima, Ikoma, all of Japan, assignors to House Food Industrial Company Ltd., Osaka, Japan

Filed Jul. 27, 1977, Ser. No. 819,284

Claims priority, application Japan, Jul. 27, 1976, 51/088659

Int. Cl.[2] A23L *1/16*

U.S. Cl. 426—439 **2 Claims**

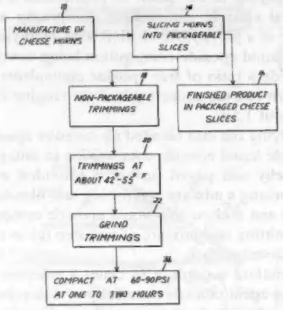


1. A method of frying raw noodles, comprising the steps of forcing apart the raw noodles to provide a mass of individual, separated raw noodles, cutting the mass of the individual, separated raw noodles, charging the cut mass of the individual, separated raw noodles into a perforated container having a height of more than 3 centimeters and the shape of a truncated cone or pyramid, a cylinder or a prism, sealingly engaging a cover with the charged container, the cover having perforations constituting from 5 to 30% of the area of the cover, immersing the charged container with the sealingly engaged cover in hot oil having a temperature of 130° C. to 160° C., and frying the raw noodles in the hot oil to produce a homogeneous mass of fried and dehydrated noodles.

4,185,126
PROCESS OF RECONSTITUTING CHEESE TRIMMINGS INTO HORNS

Rodney D. Spors, Bristol, Ind., assignor to Beatrice Foods Co., Chicago, Ill.

Continuation-in-part of Ser. No. 850,683, Nov. 11, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 938,899
Int. Cl.[2] A23C *19/02*
U.S. Cl. 426—512 14 Claims


MANUFACTURE OF CHEESE HORNS
SLICING HORNS INTO PACKAGEABLE SLICES
NON-PACKAGEABLE TRIMMINGS
FINISHED PRODUCT IN PACKAGED CHEESE SLICES
TRIMMINGS AT ABOUT 42°-55° F.
GRIND TRIMMINGS
COMPACT AT 60-90PSI AT ONE TO TWO HOURS

1. A process for reconstituting cheese trimmings into horns, such trimmings being the residue which results from cutting a pre-manufactured horn into packageable slices comprising the steps of:

(a) establishing the temperature of said trimmings in the range from about 42° F. to about 55° F. to inhibit bacteria growth on said trimmings,

(b) grinding said trimmings at about said temperature into a particulate mass of particles not greater than about nine-sixteenths inch in diameter and from about one-half to about five inches in length, and

(c) at about said temperature, ramming said particulate mass into a closed mold at a pressure and for a period of time as causes the particles in said mass to completely bond together to form a solidified, self-supporting block of cheese in said mold which is substantially like the pre-manufactured horn and in which bacteria growth is inhibited.

4,185,127
DIETETIC CAKE MIX

Sol B. Radlove, 1165 Pleasant Run Rd., Wheeling, Ill. 60090

Filed Jul. 25, 1977, Ser. No. 818,531
Int. Cl.[2] A21D *13/08*
U.S. Cl. 426—554 11 Claims

1. In a dietetic, dry cake mix, free of artificial sweeteners, having

(1) a non-shortening portion comprising flour, a sweetener, skim milk solids and dried egg whites;

(2) a shortening portion comprising a shortening and an emulsifier;

(3) a baking powder portion comprising an alkaline bicarbonate component and an acidic component;

the improvement wherein:

the sweetener consists essentially of fructose;

the acidic component of the baking powder includes glucono delta lactone and the ratio by weight of the acidic component to the alkaline component is greater than about 1.5:1.0;

the fructose and glucono delta lactone are present in such portions that the ratio by weight of the fructose to the acidic component is between about 10 and about 30 so that the cake baked from batter formed when the dry cake mix is combined with water is acidic with a pH of between about 3.5 and about 5.5, has acceptable sweetness, moisture, good volume, texture, and mouth-feel.

4,185,128
ANTI-SNAG FINISHING TREATMENT FOR FABRICS

Thomas O. Ginter, Sanford, and James W. Lalk, Shepherd, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

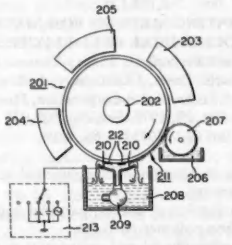
Filed May 1, 1975, Ser. No. 573,484
Int. Cl.[2] B05D *3/02*
U.S. Cl. 427—390 R 11 Claims

1. A method for reducing the snagging of fabrics comprising the application to the fabric of an emulsion of a chlorinated solvent as the continuous phase and as the dispersed phase, an aqueous latex of a polymer comprising from about 25 to 50 weight percent of a hydroxy lower alkyl acrylate, from about 6 to 12 weight percent acrylonitrile, from about 40 to 60 weight percent of a lower alkyl acrylate having from two to eight carbon atoms in the alkyl group and from about 1 to 5 weight percent acrylic acid wherein said polymer is of a molecular weight sufficiently high enough to be insensitive to chlorinated solvents and water, followed by desolvating and dewatering the coating and curing the polymer.

4,185,129
METHOD FOR DEVELOPING ELECTROSTATIC LATENT IMAGES AND REMOVAL OF EXCESS DEVELOPER

Tsukasa Kuge, Tokyo; Toru Matsumoto, Kita; Tsuyoshi Watanabe, and Yasuyuki Tamura, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1978, Ser. No. 871,710
Claims priority, application Japan, Jan. 28, 1977, 52/8320
Int. Cl.[2] G03G *13/10, 13/08, 13/22*
U.S. Cl. 430—120 11 Claims



1. A method for developing electrostatic latent images which comprises a first step of coating uniformly to an electrostatic latent image carrying surface with a developer containing developing particles to adhere the developing particles all over the surface and a second step of applying a liquid to said surface to remove the physical adhesive force of the developer so that mainly the electrostatic force of the developer is effective so that any excess developer from the surface is removed while only those developing particles which are able to be retained as a result of the relative attraction between said particles and said electrostatic latent image remain on the surface so as to visualize said latent image.

2. A developing method as claimed in claim 1, wherein said developer used in the first step comprises developing particles and a carrier liquid therefor.

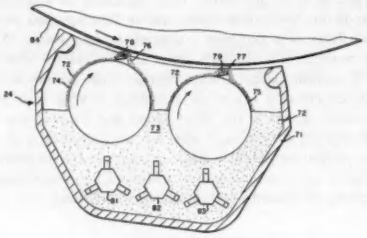
4. A developing method as claimed in claim 1, wherein said developer used in the first step consists of dry developing particles only.

5. A developing method as claimed in claim 1, which comprises the further step of applying to said developing particles an electric charge simultaneously with or subsequent to the first step.

4,185,130
MAGNETIC IMAGE DECORATOR

Donald W. Edwards, Wilmington; Richard D. Kinard, Newark; Theodore J. Wirbisky, Wilmington, all of Del., and Richard J. Angelucci, Glenolden, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 18, 1977, Ser. No. 788,668
Int. Cl.[2] B05D 5/00, 3/14
U.S. Cl. 427—47 5 Claims



1. A process of applying magnetically attractable toner particles to a surface containing a latent magnetic image comprising supplying said toner particles to at least two rotating cylinders each having at least one magnetic helix in the surface thereof said helices and said rotations cooperating to cause said toner particles to flow axially and circumferentially, and causing said toner particles to flow in a fluidized standing wave over doctor knives disposed between each of said rotating cylinders and said surface whereby a portion of said magnetically attractable toner particles come into contact with and are magnetically held by said surface containing a latent magnetic image.

4,185,131
SCREEN PRINTING METHOD FOR MAKING AN ELECTROCHEMICAL CELL ELECTRODE

Glen J. Goller, West Springfield, Mass.; Vincent J. Petraglia, Vernon, and George Dews, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 28, 1978, Ser. No. 920,038
Int. Cl.[2] H01M 4/86, 4/96
U.S. Cl. 427—113 10 Claims

1. A method for making an electrochemical cell electrode comprising the steps of:
floccing a co-suspension of carbon particles and hydrophobic fluorocarbon polymer particles;
drying the floc so produced and reducing it to a powder;
resuspending the floc powder in an inking vehicle to form an ink;
screen printing the ink onto a porous substrate to form a layer;
drying the layer to remove the inking vehicle;
compacting the layer;
sintering the compacted layer; and
catalyzing the layer.

4,185,132
METHOD OF MARKING PAVED SURFACES USING A CURABLE TWO-PART EPOXY COMPOSITION COMPRISING CURABLE LIQUID EPOXIDE AND AMINE CO-CURATIVE

Richard S. Gurney, Roseville, Minn., assignor to H. B. Fuller Company, St. Paul, Minn.

Division of Ser. No. 635,694, Nov. 26, 1975, Pat. No. 4,088,633. This application Apr. 17, 1978, Ser. No. 897,097
Int. Cl.[2] B05C 1/16; E01C 5/00
U.S. Cl. 427—137 14 Claims

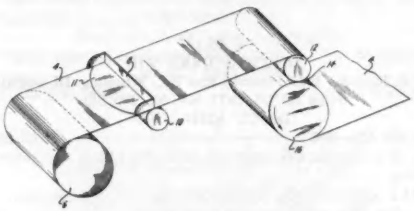
1. A method for applying a permanent marking to a paved surface, comprising:
(a) supplying to the point of application a blended co-curative agent consisting essentially of (1) aliphatic polyfunctional amine having the structural formula H_2N-R-NH_2, wherein R represents a branched aliphatic chain, and (2) cycloaliphatic polyfunctional amine having the structural formula $H_2N—R^1—A—R^2—NH_2$, wherein R^1 and R^2 represent lower alkylene groups and A represents a divalent cycloaliphatic group; said aliphatic and cycloaliphatic polyfunctional amines being blended in a weight ratio ranging from 10:90 to 90:10;
(b) supplying to the point of application a curable liquid vicinal epoxide composition comprising a polyglycidyl ether of a polyhydric alcohol; said supplying of said curable liquid epoxide composition being controlled so as to provide a ratio of free epoxide equivalents to active hydrogen-bearing amine equivalents ranging from about 1:1 to about 1.5:1;
(c) applying the said blended co-curative agent and the said curable liquid epoxide composition to said paved surface, whereby said paved surface is provided with a coating comprising a mixture comprising said blended co-curative agent and said curable liquid epoxide composition; and
(d) permitting said mixture of said step (c) to cure in situ on said paved surface.

14. A method according to claim 1 wherein said blended co-curative agent consists essentially of a di-primary amine of tri-methyl-substituted hexane and a di(aminomethyl)-substituted cyclohexane.

4,185,133
PROCESS FOR SATURATING A FIBER MAT OF OPEN STRUCTURE

Douglas C. Woerner, Northampton, Pa., and Andrew J. Manning, Randolph, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jun. 2, 1978, Ser. No. 912,040
Int. Cl.[2] B05D 3/12
U.S. Cl. 427—209 9 Claims



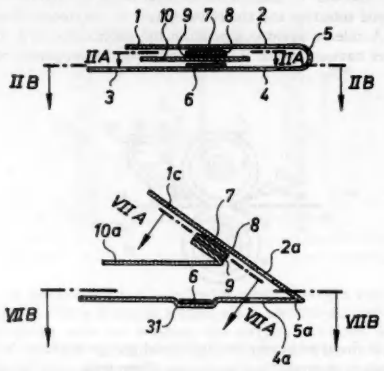
1. A method for encapsulating an open structure fiber web in polyvinylchloride resin comprising:
(a) coating heat-curable liquid polyvinylchloride plastisol or organosol onto an open structure fiber web in an amount sufficient to saturate and encapsulate the web;
(b) gelling resin on a first surface of the web by passing the web around a first heated roll with the first surface of the web in contact with the surface of the heated roll;
(c) then feeding the web, still in contact with the first heated roll, into a compression nip formed by said first roll and a second heated roll;
(d) then passing the web around the second heated roll with the second surface of the web in contact with the surface of the second heated roll to thereby gell resin on the second surface of the web; and
(e) thereafter completing curing of the resin.

4,185,134

ASSEMBLY FOR ADHESIVELY SPLICING PLIABLE TAPE ENDS

Julie Würker, D-7239 Oberndorf-Aistaig, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,734
Int. Cl.[2] B31F *5/06, 5/08;* C09J *7/02;* G03D *15/04*
U.S. Cl. 428—40 9 Claims



1. An assembly for adhesively joining two ends of a soft and pliable tape, especially a magnetic tape, comprising

a carrying strip having a substantially linear fold region permitting said strip to be folded generally in a U shape;

a first layer of adhesive on a limited zone of an inwardly facing major surface of said carrying strip;

a foil having one surface thereof releasably adhered to said first layer of adhesive;

a second layer of joining adhesive on the other surface of said foil;

a covering strip covering and releasably adhered to said joining adhesive; and

means on said carrying strip defining an alignment mark with which the two ends of the tape to be joined and said foil can be aligned when said carrying strip is folded over upon itself, said alignment mark being located on the same major surface of said carrying strip as said first layer of adhesive and spaced therefrom with said fold region therebetween,

wherein said covering strip can be removed from said joining adhesive, said joining adhesive and foil can be pressed onto the aligned tape ends and said carrying strip and first layer of adhesive can be removed from said foil.

8. An assembly for adhesively joining two ends of a soft and pliable tape, especially a magnetic tape, comprising

a carrying strip having a substantially linear fold region permitting said strip to be folded generally in a U shape;

a first layer of adhesive on a limited zone of an inwardly facing major surface of said carrying strip;

a foil having one surface thereof releasably adhered to said first layer of adhesive;

a second layer of joining adhesive on the other surface of said foil;

a covering strip covering said releasably adhered to said joining ashesive; and

means on said carrying strip defining an alignment mark with which the two ends of the tape to be joined and said foil can be aligned when said carrying strip is folded over upon itself, said alignment mark being located on the same major surface of said carrying strip as said first layer of adhesive and spaced therefrom with said fold region therebetween, said alignment mark comprising a third layer of adhesive fixedly adhered to said carrying strip, the tape ends being releasably adherable to said third layer to maintain alignment thereof,

said carrying strip further comprising means for determining proper alignment of the folded portions of said carrying strip with each other,

whereby said covering strip can be removed from said joining adhesive, said joining adhesive and foil can be pressed onto the aligned tape ends and said carrying strip and first layer of adhesive can be removed from said foil.

4,185,135

METHOD FOR COATING A TEXTILE SUBSTRATE

Caswell L. Huff, Cohutta, Ga.

Filed Dec. 13, 1977, Ser. No. 860,242
Int. Cl.[2] B32B *3/02, 30/00*
U.S. Cl. 428—96 12 Claims

7. A laminated article comprising a textile substrate having bonded thereto a dried latex-based coating layer, said coating layer having been applied to said substrate as an aqueous coating composition wherein said composition was formulated by replacing from about 5 to about 40 parts by weight of the latex normally present in said composition based on 100 parts dry latex solids with an alkali metal silicate extender, and further adding to said composition a latex compatible metal compound which will react in situ with said silicate during said drying step to render said silicate extender less water soluble.

4,185,136

COATED ELECTRODES

René Wasserman, Echichens, and Wolfgang Simm, Lausanne, both of Switzerland, assignors to Eutectic Corporation, Flushing, N.Y.

Filed Aug. 3, 1977, Ser. No. 821,502
Claims priority, application Switzerland, Aug. 3, 1976, 9870/76
Int. Cl.[2] B32B *15/02*
U.S. Cl. 428—561 10 Claims

1. A coated electrode comprising a metal core rod and a sheath coating enveloping said rod, said core rod being selected from the group consisting of an iron-base, nickel-base, cobalt-base and copper-base weld metal,

the sheath coating containing substantially no silica or lime and said coating consisting essentially by weight of about 0.01 to 3% of solid metal halogenide selected from the group consisting of alkali metal fluorides, alkali metal double flourides and MgF_2, about 2% to 8% by weight of a bonding agent selected from the group consisting of alkali metal silicates and alkali metal aluminates, up to about 5% by weight of an auxiliary extrusion agent and the balance essentially at least one hard phase-forming element in particulate form selected from the group consisting of Fe, Cr, Mo, W, V, Nb, Ta, Zr and Ti,

said sheath coating also containing carbon in an amount ranging from about 2% to 15% of the total weight of the electrode,

the ratio by weight of the core rod metal to the hard phase-forming elements in the sheath ranging from about 0.2:1 to 9:1.

4,185,137

CONDUCTIVE SHEATH/CORE HETEROFILAMENT

Richard L. Kinkel, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Continuation of Ser. No. 648,436, Jan. 12, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,764
Int. Cl.[2] D02G *3/00*
U.S. Cl. 428—372 2 Claims

1. A filament bundle selected from the group consisting of nylon or polyester filament bundles, containing at least one conductive filament having a resistance of less than 10^9 ohms/inch at a potential of 2 kilovolts comprising a sheath/core conductive filament wherein the sheath/core structure, exclusive of delusterants has a reflectance of about 31 percent and wherein said core is a conductive core, comprising a thermo-

plastic polymer having dispersed therein cuprous iodide particulate material having a particle size not greater than three microns.

4,185,138

SIZE COMPOSITION AND METHOD OF PRODUCING SAME TO RENDER GLASS FIBER HAVING IMPROVED DISPERSIBILITY IN AQUEOUS SOLUTIONS

Roy R. Graham, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 20, 1978, Ser. No. 971,454

Int. Cl.[2] **B32B** *9/00;* **D02G** *3/00*

U.S. Cl. 428—391 **12 Claims**

1. A forming size for glass fibers that renders sized glass fibers more dispersible in aqueous solutions, having as non aqueous components in the aqueous solution:

about 35 to about 90 weight percent of polyvinyl alcohol,

about 3 to about 14 weight percent of a polyamino functional polyamide resin formed from the condensation reaction product of a polycarboxylic acid and a polyamine, said polyamine having greater than 2 amine groups per molecule,

wherein the amount of said polyvinyl alcohol is at least about 5 times the amount of the polyamino functional polyamide resin, about 1 to about 4 weight percent of an organic carboxylic acid having 1 to 5 carbon atoms used to react with the polyamino functional polyamide resin to form the carboxylic salt of a polyamino functional polyamide resin,

about 1 to about 10 weight percent of a nonionic wetting agent,

about 0.5 to about 3 weight percent of an amino-alkyl alkoxy silane,

about 5 to about 30 weight percent of an alkyl imidazoline and about 1 to about 4 weight percent of an organic carboxylic acid having 1 to 5 carbon atoms to adjust the pH of the size composition in the range of about 4 to around 7.

4,185,139

FILLER FOR A GLASS-CERAMIC MATERIAL COMPRISING CaF_2 GRANULES OVERCOATED WITH A SILICON DIOXIDE FILM

Stauros Smernos, Stuttgart, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 30, 1977, Ser. No. 866,093

Int. Cl.[2] **B32B** *19/04;* **C09C** *1/02*

U.S. Cl. 428—404 **1 Claim**

1. A granular filler for a low-melting glass-ceramic solder glass useful for the modification of the coefficient of expansion of the glass-ceramic solder glass upon melting to render it compatible with the coefficient of expansion of semiconductor substrates comprising:

CaF_2 granules the surfaces of which are overcoated with a silicon dioxide film capable of interacting with the glass-ceramic solder glass at temperatures below 400° C.

4,185,140

POLYMERIC RELEASE AGENTS FOR ELECTROSCOPIC THERMOPLASTIC TONERS

Stephen Strella; Donald A. Seanor, both of Pittsford; George R. Imperial, and Thomas R. Hoffend, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

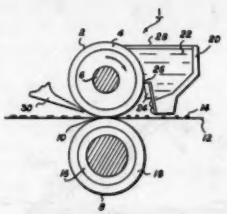
Division of Ser. No. 491,415, Jul. 24, 1974, Pat. No. 4,101,686. This application Apr. 19, 1978, Ser. No. 897,623

Int. Cl.[2] **B32B** *15/08;* **G03G** *13/20*

U.S. Cl. 428—418 **27 Claims**

1. A fuser member for an electrostatic reproducing apparatus comprising a heated, metal substrate; a release layer of polymeric fluid, abhesive to electroscopic thermoplastic resin toner of the type having no functional groups thereon, said polymeric fluid having built-in functional groups selected from the group consisting of hydroxy, epoxy, amino, isocyanate, mercapto and combinations thereof which interact with the metal substrate; and an interfacial layer which prevents the electroscopic thermoplastic resin toner from contacting the metal substrate, said interfacial layer formed by the interaction of said metal substrate and the built-in functional groups of the fluid, the polymeric fluid containing built-in functional groups remaining fluid on the surface at temperatures between about 250° F. and 400° F. said interfacial layer being located between the metal substrate and the release layer of polymeric fluid.

12. A release agent composition for application to a fuser member having a metal surface for fusing thermoplastic resin



toners of the type having no functional groups thereon, in an electrostatic reproducing apparatus comprising a polymeric fluid capable of displacing the electroscopic thermoplastic resin toner, said fluid containing built-in functional groups selected from the group consisting of hydroxy, epoxy, amino, isocyanate, mercapto and combinations thereof and capable of interacting with the metal surface of the fuser member in said apparatus to provide an interfacial barrier layer to said toner and a low surface energy film to release said toner heated by the fuser member, the polymeric fluid containing built-in functional groups remaining fluid on the surface at temperatures between about 250° F. and 400° F.

4,185,141

PRODUCTION OF COATED STRUCTURAL ELEMENTS COMPRISING INORGANIC BINDERS

Milan Krejci, and Peter Kresse, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 721,128, Sep. 7, 1976, Pat. No. 4,117,197. This application Feb. 2, 1978, Ser. No. 875,024

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1977, 2707228

The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.

Int. Cl.[2] **B32B** *9/04, 13/04*

U.S. Cl. 428—446 **24 Claims**

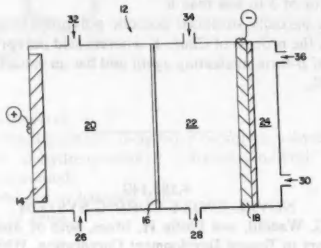
1. In the production of a coated concrete structural element by producing a workable composition of an appropriate inorganic binder and water, forming the composition into a concrete structural element, providing on the surface of the concrete structural element an inorganic salt selected from the group consisting of calcium formate, calcium chloride, calcium nitrate, magnesium nitrate, magnesium chloride, potassium chloride, sodium formate and sodium acetate, applying to the surface of the concrete structural element an aqueous paste containing at least one metal oxide and waterglass thereby to form a gel-like non-fluid coating and hardening the coated concrete structural element, the improvement which comprises hardening the concrete structural element prior to applying the aqueous paste thereto, whereby the resulting coating is of enhanced weather resistance.

24. A hardened coated structural element produced by the process of claim **1**.

4,185,142
OXYGEN ELECTRODE REJUVENATION METHODS

Frank Solomon, Great Neck, N.Y.; Donald F. Lieb, Mentor, and Ronald L. LaBarre, Euclid, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Aug. 9, 1978, Ser. No. 932,229
Int. Cl.[2] H01M 6/50
U.S. Cl. 429—49 9 Claims

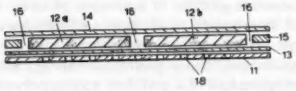


1. A method for rejuvenation of a failed oxygen electrode which has been in use in a chlor-alkali electrolytic cell comprising the steps of: washing the oxygen electrode with a solution selected from the group consisting of water or a dilute acid solution; drying the oxygen electrode with a gaseous substance at a temperature in the range of 200° to 360° C.; and subsequent to the drying step, applying a pressure in the range of 1000 to 3000 pounds per square inch for a time period in the range of 30 to 180 seconds.

4,185,143
WATER ACTIVATED BATTERIES

Dennis C. P. Birt, Bournemouth, and Leonard J. Pearce, Broadstone, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 23, 1978, Ser. No. 880,513
Claims priority, application United Kingdom, Feb. 23, 1977, 7736/77
Int. Cl.[2] H01M 6/34
U.S. Cl. 429—119 8 Claims



1. A cell of a water activated battery employing a metal/organo-halogen couple including an anode member and a cathode member comprising cathode reactant material, the anode and cathode members being of planar form with a porous insulating member sandwiched therebetween, the cell including at least one electrolyte access passageway extending at least part way into the thickness of the cathode reactant material to allow passage of the electrolyte to the central region of the cathode reactant material.

4,185,144
ELECTROCHEMICAL CELL WITH A CADMIUM PATCH ELECTRODE

Allan E. Ames, Reading; Stanley M. Bloom, Waban; Arnold Hoffman, Brookline, and Kenneth Norland, Belmont, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

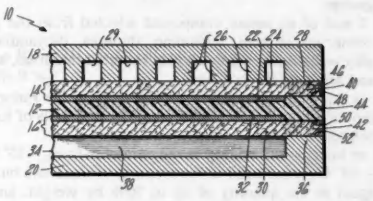
Filed Sep. 5, 1978, Ser. No. 939,876
Int. Cl.[2] H01M 6/42
U.S. Cl. 429—156 4 Claims

1. A primary electrochemical cell comprising an anode comprising cadmium, a cathode comprising manganese dioxide and an electrolyte consisting essentially of aqueous cadmium chloride wherein said anode is a cadmium dry patch anode and is prepared by contacting a zinc patch electrode which comprises a dispersion of particulate zinc in a binder matrix deposited on a conductive plastic substrate with an aqueous solution of cadmium salt for a time sufficient for the zinc and cadmium to undergo a mutual exchange reaction.

4,185,145
FUEL CELL ELECTROLYTE RESERVOIR LAYER AND METHOD FOR MAKING

Richard D. Breault, Coventry, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 11, 1978, Ser. No. 941,825
Int. Cl.[2] H01M 8/02, 8/08
U.S. Cl. 429—34 15 Claims



1. A reservoir comprising a porous, hydrophilic graphite body having a coating of particulate, wettable, amorphous carbon on its pore surfaces.

12. In an improved fuel cell utilizing a phosphoric acid electrolyte and a porous reservoir layer for controlling electrolyte volume within the cell, the reservoir layer comprising graphitized carbon fibers bonded together, the improvement comprising:

a coating of particulate, wettable, amorphous carbon on the pore surfaces of said reservoir layer.

4,185,146
POLYURETHANE BINDER COMPOSITION CONTAINING A RUBBER EXTENDER OIL AND A FINELY DIVIDED SOLID SOYBEAN DERIVATIVE

Earl S. Burke, Newport Beach, Calif., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Nov. 15, 1978, Ser. No. 960,899
Int. Cl.[2] C08L 75/08
U.S. Cl. 521—99 5 Claims

1. A composition of matter useful as a binder and comprising

(a) 100 parts by weight of a polyalkylene ether polyol having from 2 to 4 hydroxyl groups and an average molecular weight of from about 2,000 to 4,500,

(b) from about 30 to 50 parts by weight of a rubber extender oil,

(c) from about 7.5 to 25 parts by weight of a finely divided, solid soybean derivative consisting of both a proteinaceous and cellulosic fraction containing numerous —OH groups as well as reactive pendant protein groups (—COOH, —OR and —NH_2), having a large surface to mass ratio and showing good structural geometry exhibiting elongated hexagonal polygons representing the cell walls of the soybean cotyledon from which solubles have been removed, and

(d) a diisocyanate in an amount in excess of the stoichiometric amount required to react with all of the active hydrogen atoms of the polyol, and diisocyanate being selected from the group consisting of 2,4-tolylene diisocyanate, 2,6-tolylene diisocyanate, 4,4'-diphenyl methane diisocyanate, hydrogenated 4,4'-diphenyl methane diisocyanate, polymeric forms of TDI, MDI and hydrogenated MDI,

xylene diisocyanate, isophorone diisocyanate and hexamethylene diisocyanate and mixtures of the same.

4,185,147

PRODUCTION OF AMINO-SILICATE COMPOUNDS, CONDENSATION RESINOUS PRODUCTS AND FOAM

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 786,617, Apr. 8, 1977, which is a division of Ser. No. 652,338, Jan. 26, 1976, Pat. No. 4,033,935, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Oct. 27, 1978, Ser. No. 955,327

Int. Cl.[2] C08G *2/00*; C08J *9/14*

U.S. Cl. 521—154 **8 Claims**

1. The foamed poly(aldehyde amino silicate) resinous product obtained by reacting a mixture of components:

A. 0.5 to 2 mols of an oxidated silicon compound selected from the group consisting of hydrated silica, alkali metal silicates, natural silicates containing free silicic acid groups

B. 1 mol of an amino compound selected from the group consisting of urea, melamine, thiourea, dicyandiamide, alkyl-substituted ureas, alkyl-substituted thioureas, aniline and mixtures thereof, and

C. an aqueous solution of formaldehyde in the ration of 1 mol of amino silicate compound to 1 to 5 mols of formaldehyde;

D. an inert liquid, boiling at temperatures from −25° C. to +50° C., is included in the reaction mixture as a blowing agent in the quantity of up to 50% by weight, and the reaction mixture is allowed to react to completion while foaming;

E. a curing agent is added in sufficient amounts to adjust the pH to 4 to 8 or up to 95% by weight, based on the weight of the reactants, selected from the group consisting of mineral acids, hydrogen-containing acid salts, organic acids, acid alkyl phosphates, sulphonic acids, carboxylic acid chlorides, sulphonic acid chlorides, organic polyisocyanates and mixtures thereof.

4,185,148

PROCESS FOR PRODUCING THE POLYPROPYLENE FILM FOR ELECTRICAL APPLIANCES

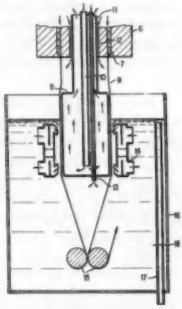
Hiroshi Sato, Saeki; Munetsugu Nakatani, and Shuichi Sugimori, both of Ohtake, all of Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Filed May 6, 1977, Ser. No. 794,602

Claims priority, application Japan, May 17, 1976, 51-56390; May 17, 1976, 51-56391

Int. Cl.[2] C08F *110/06*

U.S. Cl. 526—348.1 **8 Claims**



1. A process for producing a polypropylene film for electrical devices which comprises:

biaxially stretching an unstretched isotactic polypropylene molded article, wherein the polypropylene is devoid of β-form nucleating agent and has an isotacticity of at least 90%, having, on at least one side, a surface layer containing β-form crystals of which the mean diameter is from 7 to 100 μm and the density of said crystals is at least 1000/cm^2 and being devoid of β-form crystals in the interior thereof under such conditions that the stretching temperature at the stretch initiation point is in the range of 145° to 176° C. and the stretch ratio in one direction is a factor of 3 to less than 8.

6. The biaxially stretched isotactic polypropylene film prepared by the process of Claim 1, wherein said polypropylene is devoid of β-form nucleating agent and has an isotacticity of at least 90%,

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4,185,149

NOVEL EPOXY CURING SYSTEM

Harold G. Waddill, and Philip H. Moss, both of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Sep. 11, 1978, Ser. No. 941,820

Int. Cl.[2] C08G *59/50*

U.S. Cl. 528—111 **6 Claims**

1. An epoxy resin composition which comprises:

a vicinal polyepoxide having an average of at least 1.8 reactive, 1,2-epoxy groups per molecule and

an amount of oligomeric poly(ethylenepiperazine) effective for curing the epoxy resin.

4,185,150

PRODUCTION OF POLYAMIDES FROM DICARBOXYLIC ACIDS PRODUCED BY NITRIC ACID OXIDATION OF ORGANIC MATERIAL

Vincent P. Kuceski, Chicago Heights, Ill., assignor to The C. P. Hall Company, Chicago, Ill.

Continuation-in-part of Ser. No. 556,608, Mar. 10, 1975, abandoned. This application Mar. 20, 1978, Ser. No. 869,062

Int. Cl.[2] C08G *69/28*

U.S. Cl. 528—336 **8 Claims**

1. The method of producing a polyamide from a polyamine in an acid aqueous solution of a mixture of nitric acid, metal catalyst and dicarboxylic acid obtained from the nitric acid-metal catalyst oxidation of organic material which is oxidizable to dicarboxylic acid, which method comprises adjusting the pH of said solution to 2 to 4, and then adding polyamine which contains at least two amino groups separated by at least two carbon atoms, and heating to a temperature at which a substantial portion of the polyamine reacts with said dicarboxylic acid and produces polyamide.

4,185,151

CATIONIC DYESTUFFS

Hans-Peter Kuhlthau, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 16, 1976, Ser. No. 751,081

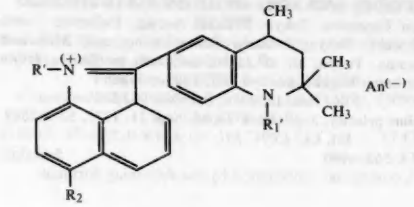
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557503; Jul. 28, 1976, 2633767

The portion of the term of this patent subsequent to Dec. 28, 1993, has been disclaimed.

Int. Cl.[2] C07D *401/04*

U.S. Cl. 546—167 **5 Claims**

1. Cationic dyestuffs of the formula



wherein

R′ is C_1–C_6-alkyl;

R_1′ is β-hydroxyethyl; β-hydroxy-n-propyl; γ-hydroxy-n-propyl; β-hydroxy-n-butyl; γ-hydroxy-n-butyl; or β-hydroxy-i-butyl;

R_2 is hydrogen or halogen; and

$An^{(-)}$ is an anion.

4,185,152

THIAZOLIDINYL ALKOXY PYRIDINES

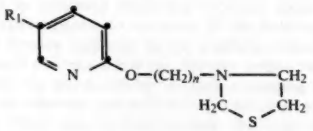
Roger D. Westland, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 30, 1971, Ser. No. 185,437

Int. Cl.² C07D *417/12*

U.S. Cl. 546—284 **6 Claims**

1. A member of the class consisting of 2-[ω-(3-thiazolidinyl-)alkoxy]pyridine compounds having the formula



and pharmaceutically-acceptable salts thereof; where R_1 is a member of the class consisting of methyl, chlorine, bromine, and iodine, and n is a positive integer having a value of from 3 to 8, said R_1 and n being selected as follows: when R_1 is methyl, n is 5; when R_1 is chlorine, n is selected from among 4, 5, and 6; when R_1 is bromine, n is selected from among 3, 4, 5, 6, 7, and 8; and when R_1 is iodine, n is selected from among 4, 5, 6, and 7.

4,185,153

PROCESS FOR PREPARING 5-(2-THIENYL)HYDANTOIN

Takehisa Ohashi; Satomi Takahashi, both of Kobe, and Koji Yoneda, Amagasaki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 9, 1979, Ser. No. 18,877

Claims priority, application Japan, Mar. 15, 1978, 53-30061

Int. Cl.² C07D *409/04*

U.S. Cl. 548—309 **7 Claims**

1. A process for preparing 5-(2-thienyl)hydantoin which comprises reacting glyoxylic acid, urea and thiophene in the presence of an acid at an elevated temperature.

4,185,154

SYNTHESIS OF VITAMIN E

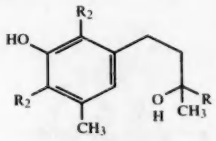
Gary L. Olson, Union County, and Gabriel Saucy, Essex County, both of N.J., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

Division of Ser. No. 797,713, May 17, 1977, Pat. No. 4,127,608. This application Sep. 11, 1978, Ser. No. 941,511

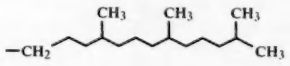
Int. Cl.² C07C *69/84, 39/06*

U.S. Cl. 560—60 **3 Claims**

1. A compound of the formula



wherein R_2 is CH_3 or CO_2R_5; R_5 is lower alkyl; wherein R is



4,185,155

PRODUCTION OF ALKYL (ALKYLTHIO) CARBOXYLATES

Henry Bader, Newton, and Susan J. Pavelko, Malden, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

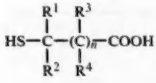
Filed Oct. 28, 1977, Ser. No. 846,443

Int. Cl.² C07C *148/00, 149/20*

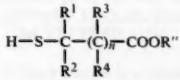
U.S. Cl. 560—152 **8 Claims**

1. A process which comprises the following steps:

esterifying a mercaptocarboxylic acid of the formula



where each of R^1, R^2, R^3, and R^4 is hydrogen, methyl or ethyl and n is zero or an integer 1–4, with a primary or secondary alcohol of the formula R″OH, where R″ is a primary or secondary alkyl group with from 4–20 carbon atoms, by heating said acid in a medium comprising a suitable solvent and a strong acid catalyst, said solvent being capable of forming an azeotrope with water, to form an alkyl mercaptocarboxylate of the formula



and water,

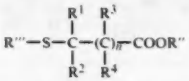
removing said water by azeotropic distillation from said medium substantially as said water is formed,

adding an alkylating agent containing R''' where R''' is alkyl or aralkyl, and thereafter

adding no more than a molar equivalent of an aqueous strong base to the mixture of said alkyl mercaptocarboxylate and said alkylating agent at such a rate that said alkyl mercaptocarboxylate forms a mercaptide in preference to being saponified,

reacting said mercaptide with said alkylating agent,

whereby an alkyl (alkylthio) carboxylate of the formula



is formed.

4,185,156

PEPTIDES AND ACID ADDITION SALTS THEREOF

Hamao Umezawa, Tokyo; Takaaki Aoyagi, Fujisawa; Tomio Takeuchi, Tokyo; Tetsushi Saino, Yono, and Michinori Koyama, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

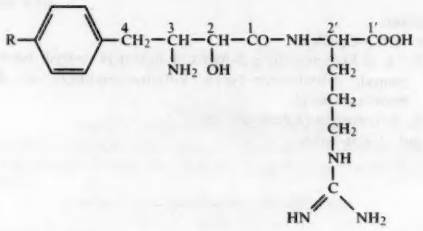
Filed Sep. 15, 1978, Ser. No. 942,581

Claims priority, application Japan, Sep. 21, 1977, 52-112568

Int. Cl.[2] **C07C** *101/72;* **A01N** *9/20*

U.S. Cl. 562—440 **5 Claims**

1. A compound represented by the following formula:



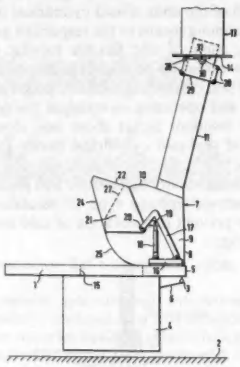
wherein R is hydrogen, hydroxy or alkyl having 1 to 4 carbon atoms and pharmaceutically acceptable acid addition salts thereof.

4,185,157

APPARATUS FOR COLLECTING AND REMOVING SMOKE AND FUMES FROM A MELTING FURNACE PLANT

Karl-Erik Sjögren, Sandared, Sweden, assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Jun. 12, 1978, Ser. No. 914,560
Claims priority, application Sweden, Jul. 7, 1977, 7707925
Int. Cl.[2] F27B *14/02*
U.S. Cl. 13—1 17 Claims



1. For a melting furnace plant having a platform tiltably supported by stationary supporting members about a tilting axis generally adjacent to one edge of the platform, and an induction furnace supported by the platform including a peripheral wall defining a melting chamber within the furnace open at the top and accessible through a charging hole provided in the platform, said wall having a pouring spout proximate the tilting axis to accommodate discharge of molten products from the furnace chamber to a discharge station adjacent the furnace, an apparatus for collecting and removing smoke and fumes comprising:

a hood carried by the platform having a bottom inlet opening and being of an inverted funnel-like configuration providing a smoke and fume collecting chamber therewithin,

exhaust means,

ducting means providing fluid communication between said collecting chamber and said exhaust means,

stationary support means,

a stem member extending from said hood and being connected to said stationary support means for essentially conjoint movement of the hood and stem member about a pivot axis parallel to the tilting axis of the platform, and

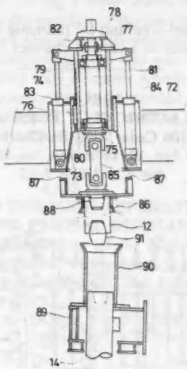
said stem member being radially and angularly displaceable about said pivot axis to accommodate shifting movement of the hood with respect to the furnace from a first position in which the bottom opening generally overlies the surface of the platform and said charging hole to a second position whereat the bottom opening extends laterally beyond the platform and substantially overlies the discharge station of the pouring spout, and at least at large tilting angles of the platform portions of said hood cooperate with the platform to substantially enclose said charging hole, thereby enhancing aspiration of smoke and fumes from the discharge station during pouring operations.

4,185,158

APPARATUS FOR ELECTRIC FURNACE CAPABLE OF EFFECTING ELECTRODE CONNECTION AND REFRACTORY LINING REPAIRS INDEPENDENTLY OF EACH OTHER

Minoru Koga, Nanpeidai, and Yoshio Yanagi, Matsudo, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1977, Ser. No. 860,942
Claims priority, application Japan, Dec. 20, 1976, 51-153060; Oct. 11, 1977, 52-121692
Int. Cl.[2] H05B *7/14;* F27D *1/16*
U.S. Cl. 13—18 C 4 Claims



1. Apparatus for connecting a new furnace electrode to a consumed electrode mounted in the furnace comprising means for releasably holding a new electrode to be connected to the consumed electrode, means for rotating said holding means, means including a universal joint for interconnecting said holding means and rotating means, means for vertically moving said holding means and said rotating means to align the electrodes, and cooperating means carried by the new electrode and the consumed electrode to threadedly interconnect said electrode during rotation of said rotating means, said holding means and said new electrode.

4,185,159

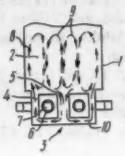
METHOD FOR MELTING METALS IN A CHANNEL-TYPE INDUCTION FURNACE

Imant E. Butseniex, ulitsa Mira, 19, kv. 14, Rizhsky raion, Salaspils; Margarita Y. Levina, ulitsa Sormovskaya, 10, korpus 1, kv. 29; Alexandr A. Prostyakov, ulitsa Veshnyakovskaya, 35/26, kv. 66, both of Moscow; Mikhail Y. Stolov, ulitsa Volochaevskaya, 40 A, kv. 36, Moscow; Vladimir I. Sharamkin, ulitsa Mira, 16/7, kv. 313, and Eduard V. Scherbinin, ulitsa Mira, 16/6, kv. 21, both of Rizhsky raion, Salaspils, all of U.S.S.R.

Filed Nov. 30, 1976, Ser. No. 745,997
Claims priority, application U.S.S.R., Dec. 8, 1975, 2196774
Int. Cl.[2] H05B *5/14*
U.S. Cl. 13—29 3 Claims

1. A method for melting metals in a channel-type induction furnace having a hearth coupled to a double channel-type unit provided with two inductors, each inductor being located at a separate magnetic core, comprising the steps of generating variable magnetic fluxes in said cores, the phase shift angle

between said magnetic fluxes being less than 90 electrical degrees; and creating a through flow of metal along the chan-



nels of said channel-type unit by reducing hydrodynamic turbulence at the outlet of a central channel.

4,185,160

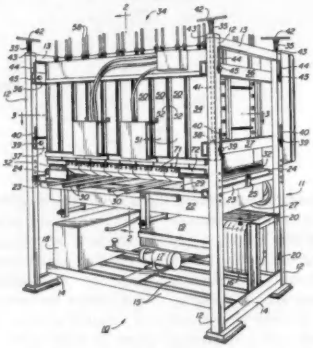
ELECTRIC SLOT FURNACE

Donald I. Gray, 1106 Cedar Ave., St. Charles, Ill. 60174

Filed Apr. 19, 1978, Ser. No. 897,593

Int. Cl.[2] H05B *1/02*

U.S. Cl. 13—24 **5 Claims**



1. An electric furnace having a hearth on which articles to be heated may be placed, comprising

a resistance type electric heating element mounted in said furnace above said hearth,

first temperature sensing means for sensing the temperature of said element,

second temperature sensing means for sensing the temperature of said furnace in proximity to said hearth, and

control means responsive to said first temperature sensing means for limiting the power to said element to a fraction of the power rating thereof when the temperature of said element is below a predetermined value, and responsive to said second temperature sensing means for controlling the power to said element in response to the temperature of said furnace in proximity to said hearth when the temperature of said element is above said predetermined value.

4,185,161

MODULAR GUYLINE INSULATOR

Kwang T. Huang, Ventura, and Brian R. Milner, Camarillo, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 22, 1977, Ser. No. 826,608

Int. Cl.[2] H01B *17/02, 17/36, 17/44*

U.S. Cl. 174—11 R **12 Claims**

1. A modular guyline insulator device for use with VLF antennas, comprising:

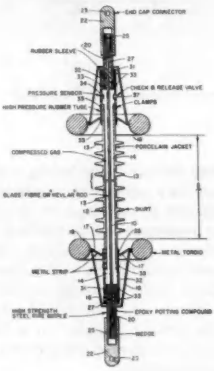
(a) a single elongated tension member of high tensile strength, lightweight, electrically insulative material;

(b) the ends of said elongated tension member each being securely attached by fastening means to respective guyline connector means;

(c) an elongated cylindrical insulator jacket surrounding and spaced apart from said elongated tension member over at least a major portion of the length of said tension member and forming a cylindrical cavity between said tension member and the inner wall of the cylindrical insulator jacket; said cylindrical insulator jacket being shorter than said tension member and being longitudinally spaced along the length from each of said fastening means; said cylindrical insulator jacket operating to prevent arc breakdown along the surface of the device and protect said tension member from exposure to ultraviolet radiation;

(d) flexible insulative tubular sealing means positioned between each of the ends of said cylindrical insulator jacket and said fastening means to the respective guyline connector means; each of said flexible tubular sealing means forming an extension to said cylindrical cavity between the ends of said cylindrical insulator jacket and said fastening means and operating to maintain the position of said cylindrical insulator jacket about said elongated tension member and seal said cylindrical cavity from the atmosphere;

(e) said cylindrical cavity being filled and pressurized with a high breakdown voltage type of insulative gas which operates to prevent deterioration of said tension member due to arcing;



(f) a pair of metal toroid corona rings and respective first and second metal mounting means therefor; one of said pair of metal toroid rings being mounted at each end of said cylindrical insulator jacket; said first metal mounting means being connected between respective metal toroid rings and the respective ends of said cylindrical insulator jacket; said second metal mounting means being elongated to permit flexibility thereof and being connected between respective metal toroid rings and said fastening means at respective ends of the modular guyline insulator device; said second metal mounting means extending from respective toroid rings at the end of the cylindrical insulator jacket beyond the length of said flexible tubular sealing means to respective said fastening means; said flexible tubular sealing means together with said first and second metal mounting means cooperating to position said cylindrical insulator jacket and simultaneously allow movement of both said metal toroid rings and said cylindrical insulator jacket while minimizing mechanical stresses on said cylindrical insulator jacket for protection of said tension member under various conditions normally encountered by guyline insulators thereby permitting greater flexibility of the guyline insulator device; said guyline insulator device operating to diffuse and minimize

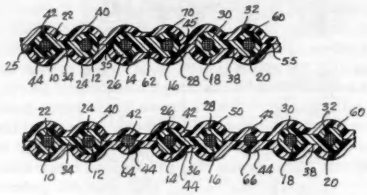
the electric field in the vicinity of the said tension member fastening means to respective guyline connector means and simultaneously providing high voltage protection by forcing any arcing to occur through the atmosphere outside the insulator.

4,185,162

MULTI-CONDUCTOR EMF CONTROLLED FLAT TRANSMISSION CABLE

Stephen B. Bogese, II, Roanoke, Va., assignor to Virginia Plastics Company, Roanoke, Va.

Filed Jan. 18, 1978, Ser. No. 870,566
Int. Cl.[2] H01B *7/08, 11/08*
U.S. Cl. 174—32 **11 Claims**



9. A multi-conductor flat transmission cable, which comprises:

at least three parallel, spaced signal conductors, each of said signal conductors enclosed by a first insulation comprised of a polymer material having a relatively high velocity of propagation, each signal conductor and its respective insulation having a substantially circular uniform cross-section along its length; and

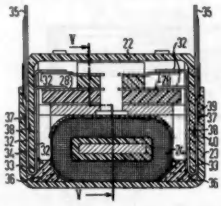
insulation means positioned between each of said conductors for controlling the electromagnetic field interaction between said adjacent conductors, insulation means being relatively thick between certain of said adjacent conductors and relatively thin between others of said adjacent conductors.

4,185,163

HOUSING ASSEMBLY FOR AN ELECTROMAGNETIC RELAY

Helmut Schedele, Hoegling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 16, 1977, Ser. No. 797,340
Claims priority, application Fed. Rep. of Germany, May 18, 1976, 2622133
Int. Cl.[2] H01H *9/04*
U.S. Cl. 174—52 S **1 Claim**



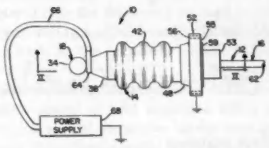
1. A housing for electric relays comprising first and second open ended tub-shaped housing components having peripheral side walls extending from a bottom wall, the second component being smaller than the first component and dimensioned to be received within the first component with terminal pins extending between the peripheral side walls of the components, the components being assembled together in inverted nestled relation with the peripheral side walls of the components overlapping and engaging the terminal pins with a space between a peripheral edge of the side wall of the second component and an inside surface of the bottom wall of the first component, said space being filled with a sealing means for effectively sealing the interior of the housing from the exterior with the peripheral edge of the second component being submerged in the sealing means, said nestled components defining an interior open area, an electric relay assembly being disposed in said open area and having moving parts, said moving parts being positioned above the bottom wall of the first component and the sealing means having a depth above the bottom wall less than the height of the position of the moving parts and less than the overlap height area of the peripheral side walls of the tub-shaped housing components, and said side walls and terminal pins having coacting lock elements which are effective in locking the housing components in the nestled relationship at a proper position with respect to one another with said space between the edge and bottom wall.

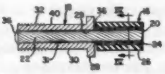
4,185,164

VOLTAGE FEED THROUGH APPARATUS HAVING REDUCED PARTIAL DISCHARGE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Stephen R. Peck, King of Prussia, and Jeffrey W. Benham, Jeffersonville, both of Pa.

Filed Jan. 10, 1978, Ser. No. 868,249
Int. Cl.[2] H01B *17/26, 17/44*
U.S. Cl. 174—142 **6 Claims**





1. Apparatus for feeding voltage through the wall of a container, comprising:

electrical conductor means formed of copper having silver plating surrounding the outer periphery thereof forming a substantially smooth surface for preventing concentrated electrical field buildup;

terminal means connected to said electrical conductor means for applying electrical power thereto from a source outside of said container;

semi-conductor sleeve means surrounding said electrical conductor means for reducing electrical field stress around said electrical conductor means by providing a smooth, equipotential field at said semi-conductor sleeve means and said electrical conductor means interface;

insulating sleeve means surrounding said semi-conductor sleeve means for insulating said electrical conductor means and for providing a substantially void-free bond

between said semi-conductor sleeve means and said insulating sleeve means;

a first sleeve formed substantially of 54 percent Fe, 29 percent Ni, and 17 percent Co and surrounding a portion of said terminal means;

a second sleeve formed substantially of high alumina ceramic, said second sleeve being bonded to said first sleeve and surrounding a portion of said insulating sleeve means forming a space therebetween;

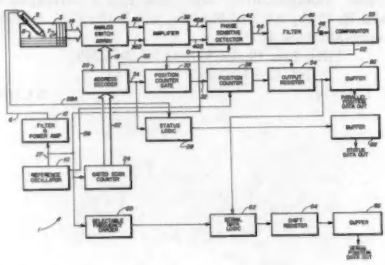
a third sleeve formed substantially of 54 percent Fe, 29 percent Ni, and 17 percent Co, said third sleeve being spaced from said first sleeve and surrounding and bonded to said second sleeve; and

a flange surrounding a portion of said second sleeve for securing to the wall of the container.

4,185,165
LOW NOISE SYSTEM AND METHOD FOR SEQUENTIALLY SENSING INDUCED SIGNALS IN DIGITIZER GRID CONDUCTORS

George A. Fencl, Phoenix, Ariz., assignor to Talos Systems, Inc., Scottsdale, Ariz.

Filed Jul. 3, 1978, Ser. No. 921,514
Int. Cl.[2] G08C *21/00*
U.S. Cl. 178—19 7 Claims



1. In a digitizer including

i. a first group of parallel conductors and a second group of parallel conductors oriented perpendicularly to the conductors of the first group, each of the conductors having a first end and a second end,

ii. an instrument supporting a coil for inducing signals in the respective conductors,

iii. a differential amplifier having first and second inputs,

a low noise switching system for sequentially applying the induced signals between the first and second inputs, said low noise system comprising in combination:

(a) a first common conductor coupled to said first ends of each of said conductors of said first group;

(b) a second common conductor coupled to said first ends of each of said conductors of said second group;

(c) first multiplexer means having an output coupled to said first input of said differential amplifier and a plurality of inputs coupled, respectively, to said second ends of each of said conductors of said first group for sequentially coupling said induced signals in said conductors of said first group to said output of said first multiplexer means.

4,185,166
MULTI-MODE DIGITAL ENCIPHERING SYSTEM

Frederick A. Kinch, Jr., Richardson, and Barrie O. Morgan, Dallas, both of Tex., assignors to Datotek, Inc., Dallas, Tex.

Division of Ser. No. 568,096, Apr. 14, 1975, Pat. No. 4,079,188.
This application Sep. 12, 1977, Ser. No. 832,193
Int. Cl.[2] H04L *9/00*
U.S. Cl. 178—22 1 Claim

1. A digital cipher system for use with a teleprinter operable in the half-duplex mode and having a keyboard and a printer interconnected with a two wire transmission system comprising:

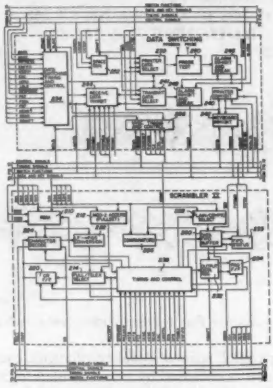
means for connecting the keyboard and printer of the teleprinter in series,

keyboard receiving means for receiving keyboard digital data from the keyboard,

means for enciphering said keyboard digital data,

means for transmitting the keyboard enciphered digital data on the transmission system,

printer inhibit means for suppressing the operation of said



printer during the operation of the keyboard in order to prevent the data being transmitted on the transmission system from being reflected back and printed by said printer,

data receiving means for receiving externally transmitted enciphered digital data from the transmission system;

means for deciphering the received enciphered digital data,

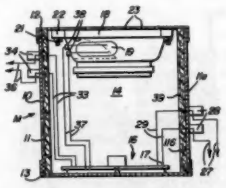
means for directing the deciphered digital data to the printer for printing, and

keyboard inhibit means for suppressing the operation of said keyboard during the operation of the printer.

4,185,167
SOUND MASKING PACKAGE

Donald R. Cunningham, Randolph, and James E. Sulewsky, Mendham, both of N.J., assignors to Acoustical Design Incorporated, Morristown, N.J.

Continuation of Ser. No. 700,595, Jun. 28, 1976, abandoned.
This application Aug. 11, 1978, Ser. No. 933,024
Int. Cl.[2] H04R *3/00*
U.S. Cl. 179—1 AA 3 Claims



1. A self-contained sound masking package comprising, in combination, a closed housing having an acoustically permeable top wall, a side wall, and a bottom wall, defining an interior, circuit means formed as a printed circuit board with an electric circuit arranged on said printed circuit board disposed within said housing interior including means for supporting said circuit means adjacent said bottom wall in parallel relationship therewith for producing a plurality of signal voltages

having frequencies at predetermined relative decibel levels, said levels thereby forming at least two selectable spectrums having respective frequencies at different decibel levels, switch means connected to said electric circuit for selecting one of said spectrums, a loudspeaker having a speaker cone and a coil and wherein said signal voltages are applied to said loudspeaker coil by said connecting means disposed within said housing including means for supporting said loudspeaker adjacent said acoustically permeable top wall and being directed outwardly for introducing an audio output signal into the area surrounding said housing, sound damping material affixed to the inner surface of said side wall, means for connecting said circuit means to an associated source of electric power, means for connecting the output of said circuit means to said loudspeaker for applying the plurality of signal voltages from said circuit means to said loudspeaker to produce said audio output signal within said audible frequency range and with the frequencies in said audible frequency range at said predetermined relative decibel levels, level control means for adjusting the level of said audio output signal, and means for connecting an associated remote signal source to said circuit means for applying said remote signal to said loudspeaker to provide an audio output signal corresponding to said remote signal in addition to the audio signal produced by said circuit means into the area surrounding the housing.

4,185,168

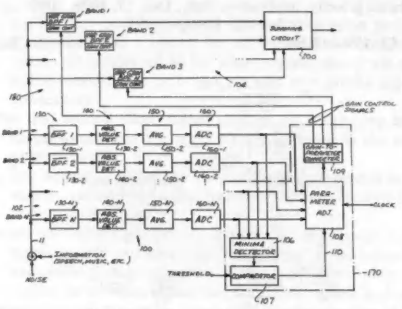
METHOD AND MEANS FOR ADAPTIVELY FILTERING NEAR-STATIONARY NOISE FROM AN INFORMATION BEARING SIGNAL

Daniel Graupe, 2821 Redwing, Fort Collins, Colo. 80521, and G. Donald Causey, 3504 Dunlop, Chevy Chase, Md. 20015

Continuation-in-part of Ser. No. 707,569, Jul. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 683,234, May 4, 1976, Pat. No. 4,025,721. This application Jan. 4, 1978, Ser. No. 866,938

Int. Cl.[2] H04R *27/00*

U.S. Cl. 179—1 P **27 Claims**



1. A method for detecting the presence of noise of the type described, i.e., near stationary, relatively long duration noise, in an input signal containing information such as speech whose parameters change more rapidly than the noise parameters, said method comprising the steps of:

(a) dividing the input signal into a first set of signals limited to different frequency bands;

(b) processing the signal in each band to obtain a function of its absolute value; and

(c) detecting the presence of noise of the type described in the input signal from time-wise variations in the function of the absolute value of the signals in the first set.

4,185,169

SYNTHETIC-SPEECH CALCULATORS

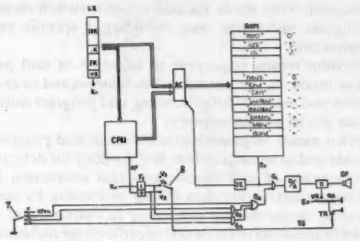
Akira Tanimoto, Kashihara; Sigeaki Masuzawa, Nara; Shinya Shibata, Nara, and Shinzo Nishizaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Feb. 3, 1978, Ser. No. 874,950

Claims priority, application Japan, Feb. 4, 1977, 52/13529[U]; Feb. 10, 1977, 52/13629; Feb. 25, 1977, 52/20496; Feb. 28, 1977, 52/22084; Feb. 28, 1977, 52/22085

Int. Cl.[2] G06F *3/16*

U.S. Cl. 179—1 SM **12 Claims**



1. A synthetic-speech calculator having a keyboard comprising:

a memory means for storing a plurality of sound related digital codes;

means responsive to actuations of said keys on said keyboard for selecting previously stored specific sound related digital codes from said memory means thereby generating audible sound signals;

means responsive to the sequential actuation of at least two keys for generating audible sounds characteristic of said at least two keys in the sequence of the actuation of said keys;

means for discontinuing the generation of the first characteristic audible sound of said sequence when a subsequent key actuation in said sequence occurs during the generation of said first characteristic audible sound; and

means for resuming the generation of said first characteristic audible sound of said sequence followed by the audible sounds characteristic of the subsequently actuated keys after said subsequent key operations are completed.

4,185,170

PROGRAMMABLE SYNTHETIC-SPEECH CALCULATORS OR MICRO COMPUTERS

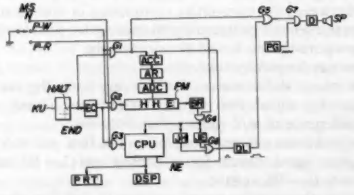
Masuaki Morino, Nara, and Shintaro Hashimoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Apr. 26, 1978, Ser. No. 900,200

Claims priority, application Japan, Apr. 30, 1977, 52-51544; Apr. 30, 1977, 52-51545

Int. Cl.[2] G06F *3/16*

U.S. Cl. 179—1 SM **8 Claims**



1. A programmable calculator having a normal mode, a program read mode, and a program write mode, comprising:

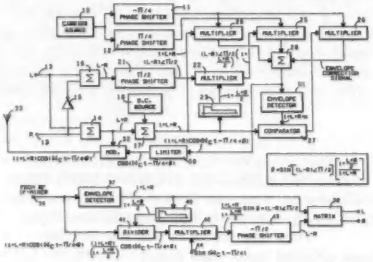
a housing;
actuator switch means on said housing for selecting one of said normal mode, said program read mode and said program write mode, respectively;
a keyboard on said housing;
audible sounding means responsive to selection of said program write mode via said actuator switch means and to actuation of keys on said keyboard for generating a first audible sound indicative of each actuation of each of said keys on said keyboard, actuation of each of said keys storing program instruction data into a memory of said programmable calculator in response to selection of said program write mode via said actuator switch means, said program instruction data including a specific program instruction;
processing means responsive to selection of said program read mode via said actuator switch means and to an output from said memory for processing said program instruction data stored in said memory;
detector means responsive to selection of said program read mode and to an output from said memory for detecting the occurrence of said specific program instruction in said program instruction data during processing by said processing means thereby generating an output signal indicative of the occurrence of said specific program instruction; and
said audible sounding means generating a second audible sound in response to said output signal from said detector means indicative of the occurrence of said specific program instruction encountered during processing of said program instruction data by said processing means.

4,185,171

COMPATIBLE SINGLE SIDEBAND SYSTEM FOR AM STEREO BROADCASTING

Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 20, 1978, Ser. No. 897,988
Int. Cl.[2] H04H 5/00
U.S. Cl. 179—1 GS **6 Claims**



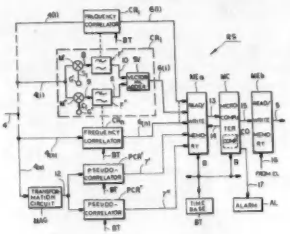
1. A transmitter for transmitting a signal of the form $(1+L+R)\cos\sin(\omega_c t-\pi/4+\phi)$ where ϕ is arc sin $\{[(L-R)\angle\theta][1+(L+R)/2\angle\beta]/[1+(L+R)\angle\beta]\}$, where L and R are program signals and θ and β have a 90° phase difference therebetween, the transmitter comprising in combination:
first and second program signal sources for providing signals proportional to L and R respectively;
a carrier frequency source;
first phase shifter means for deriving from the carrier frequency signal two signal components having a phase difference of $\pi/2$ radians therebetween;
first combining means coupled to the first and second program signal sources for providing sum (L+R) and difference (L−R) signals;
second phase shifter means coupled to shift the phase of the difference signal by $\pi/2$ radians;
a DC source for providing a signal proportional to the unmodulated carrier level;
second combining means for adding the DC carrier level signal to the sum signal;
filter means coupled to receive the output signal of the second combining means and having a pass band for reducing the amplitude of the audio portion of the output signal thereof to substantially $\frac{1}{2}$ with respect to a band of frequencies lower than audio frequencies and including DC;
first multiplier means for multiplying the output signal from the filter means by the output signal of the second phase shifter means;
second multiplier means for multiplying a first one of the phase shifted carrier frequency signals by the output signal of the second combining means;
third multiplier means for multiplying the other of the carrier frequency signals by the output signal of the first multiplier means;
third combining means for combining the output signals of the second and third multiplier means;
detector means coupled to detect the amplitude modulation on the output signal of the third combining means;
comparator means coupled to compare the output signals of the second combining means and the detector means;
forth multiplier means for multiplying the first one of the carrier frequency signals by the output signal of the comparator means, the output signal of the fourth multiplier means also being coupled to the third combining means for being combined with the output signals of the second and third multiplier means;
limiter means coupled to limit the amplitude of the output signal of the third combining means; and
modulator means for amplitude modulating the output signal of the limiter means with the sum signal from the first combining means.

4,185,172

METHOD OF AND MEANS FOR DETECTING DIGITIZED MULTI FREQUENCY-CODED SIGNALS

Flavio Melindo, and Renato Rocci, both of Turin, Italy, assignors to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Continuation-in-part of Ser. No. 861,517, Dec. 16, 1977, abandoned. This application May 17, 1978, Ser. No. 906,857
Claims priority, application Italy, Dec. 16, 1976, 70007 A/76
Int. Cl.[2] H04Q 11/00
U.S. Cl. 179—15 BY **10 Claims**



1. A method of detecting digitized samples of multifrequency-coded incoming signals received at an exchange of a telecommunication system utilizing a code of m out of n signaling frequencies, comprising the steps of:
correlating each incoming-signal sample with all n signaling frequencies to produce n resulting signals;
evaluating the magnitudes of said resulting signals to determine the m signals whose magnitudes surpass a reference level for at least a predetermined minimum time interval;
storing the magnitudes attained by said m signals at the end of said time interval together with a commencement code identifying said m signals;

comparing the stored magnitudes and said reference level with the instantaneous magnitudes of said m signals in successive sampling cycles to determine the instants when each of said instantaneous magnitudes drops below the higher one of two values respectively represented by said reference level and by a predetermined fraction of the corresponding stored magnitude, said reference level being chosen as the larger one of a fixed threshold and a variable threshold, the latter being proportional to the mean of the absolute values of the incoming-signal samples as averaged over a succession of sampling cycles; and registering a termination code at the last of said instants.

4,185,173

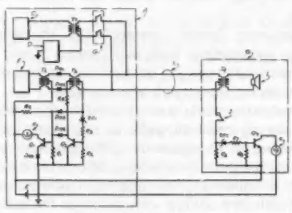
KEY TELEPHONE CALL SIGNALLING CIRCUIT

Stephen E. Kerman, Merrick, N.Y.; Fumikazu Hamatani, Kawasakishi, Japan; Fumio Tsutsumi, Takasakishi, Japan, and Yuji Tanaka, Kawasakishi, Japan, assignors to Nippon Tsū Shin Kōgyō K.K., Kawasaki, Japan and TIE/Communications, Inc., Stamford, Conn.

Continuation of Ser. No. 728,592, Oct. 1, 1976, abandoned. This application Jul. 18, 1978, Ser. No. 925,821

Int. Cl.² H04M *1/72*

U.S. Cl. 179—99 P **4 Claims**



1. A calling circuit comprising, an audio transmission path of two conductors and two common power supply conductors, all extending from a main control circuit to a telephone station set,

a loudspeaker coupled to said audio transmission path, a hookswitch and a station set indicator in the telephone station set connected to the main control circuit via said audio transmission path and via said two power supply conductors,

first and second audio signal sources, an alternating lamp signal source and a control circuit indicator in the main control circuit,

a first switching means for coupling said loudspeaker in the station set via said audio transmission path to said first audio signal source,

a second switching means for connecting said second audio signal source and said alternating lamp signal source to said audio transmission path of two conductors when said station set is being called and said hook switch is closed,

control circuit means for preventing the energization of said station set indicator and said control circuit indicator when said hook switch is closed and the telephone set is not being called; for responding to the alternating lamp signal generated by said alternating lamp signal source and applied to said audio transmission path (1) by energizing said station set indicator periodically during first half-cycles of said alternating lamp signal, (2) by energizing said control circuit indicator periodically during second half-cycles of said alternating lamp signal, and (3) by controlling said first switching means to decouple said first audio signal source from said audio transmission path; and for constantly energizing said control circuit indicator when said hook switch is open.

4,185,174

METHOD AND APPARATUS FOR CHECKING CONNECTION PATHS IN A TELEPHONE EXCHANGE

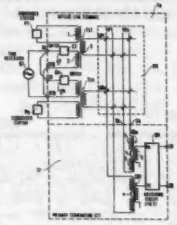
Désiré Beyhurst, Geispolsheim; Jean-Jacques Bronner, Bischoffsheim; Jean-Claude Fuhrer, Lipsheim, and Henri Kraess, Strasbourg, all of France, assignors to La Telephone Industrielle et Commerciale-Telic, Strasbourg, France

Filed Jun. 20, 1978, Ser. No. 917,225

Claims priority, application France, Jun. 30, 1977, 77 20077

Int. Cl.² H04M *3/24*

U.S. Cl. 179—175.2 R **8 Claims**



1. Apparatus for testing the state of electrical continuity of a connection chain in a telephone exchange, the apparatus being integrated in the switching machine of the exchange and being arranged to perform checks continuously on connections by applying an alternating signal to one end of the connection and picking up this signal at a measuring circuit placed at the end of the connection, the apparatus including a tone-feed circuit which is constituted by the tone circuits of the switching machine situated at the subscriber line and outside line equipments thereof, each tested connection chain comprising a tone generator, at least one interrupter switch for giving a cadence to a tone in normal telephone operation, a coupling transformer connected to at least one primary switching matrix, a matrix cross-point feed transformer, and the measuring circuit which is connected to a secondary winding of the feed transformer.

4,185,175

CUSHIONED EXTENSION FOR TELEPHONE EARPIECE

Dennis K. Kondo, and Michael Colombo, both of 2343 Walu Way, Honolulu, Hi. 96822

Filed Oct. 26, 1977, Ser. No. 845,702

Int. Cl.² H04R *1/10*

U.S. Cl. 179—182 R **11 Claims**

1. Earpiece cushioning apparatus for a telephone comprising mounting means for connection to a telephone handpiece, the mounting means comprising a body having connecting means for connecting the body to the handpiece and having a peripheral rim extending outward from the body remote from the connecting means for at least partially surrounding an earpiece, cushioning means removable from the main body and connectable to the rim, the cushioning means having engaging means for engaging the rim, wherein the cushioning means comprises first and second parts, the first part being relatively larger than the second part, and the first part overlying the rim, with the second part positioned within the body adjacent the rim, whereby the first part rests against the head of a user and

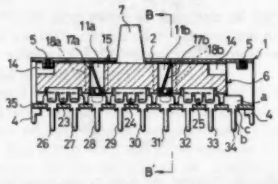
surrounds an upper portion of an ear, and whereby the second part rests against an upper portion of an ear of the user.

4,185,176

CHANGE-OVER SWITCH FOR USE IN HIGH-FREQUENCY ELECTRIC CIRCUITS

Toshitaka Matsuo, Kakuta, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1978, Ser. No. 878,402
Claims priority, application Japan, Feb. 18, 1977, 52-18683[U]
Int. Cl.[2] H01H *15/00*
U.S. Cl. 200—16 D **9 Claims**



1. A switch for use in switching high-frequency electric signals, comprising:

an elongate frame comprised of an electrically conductive material;

a substrate plate fixed to said frame and comprised of an electrically insulating material;

at least one row of fixed terminals carried by said substrate plate, each said row including

an output terminal,

two input terminals spaced in opposing directions from said output terminal and

grounding terminals each adapted to be connected to electrical ground and located between said output terminal and a respective input terminal;

a slider received slidably within said frame and carrying one set of movable contacts for each said row for alternatively connecting one or the other of said input terminals with said output terminal of the same row; and

means carried by said slider for shielding each said input terminal from electromagnetic radiation from the other of the same row, said shielding means including

first and second leg portions each comprised of a resilient conductive material, said leg portions each being positionable by said slider whereby contact portions of one of said leg portions will engage the grounding terminal between said output terminal and the input terminal connected electrically thereto by said movable contacts, and

arm portions comprised of a resilient conductive material and slidingly contacting the inner surface of said frame, said arm portions also each being positionable by said slider whereby tab portions of some of said arm portions will engage the same grounding terminal engaged by a contact portion of said one leg portion.

4,185,177

LATCH OPERATED TAP CHANGING SWITCH FOR TRANSFORMER REGULATING SYSTEM

Clyde Gilker, South Milwaukee, and Arland D. Lamke, Franklin, both of Wis., assignors to McGraw-Edison Company, Elgin, Ill.

Division of Ser. No. 761,011, Jan. 21, 1977, Pat. No. 4,090,225. This application Mar. 2, 1978, Ser. No. 882,583
Int. Cl.[2] H01H *3/00*
U.S. Cl. 200—17 R **3 Claims**

1. A transfer switch for disconnecting a source of energy from a tap-changing transformer regulating system having a non-arcing tap switch arrangement, and for connecting the source directly to a load, comprising:

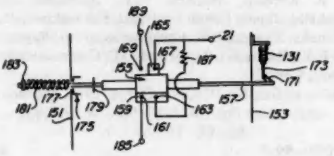
a movable contact block;

a contact block carrying member mounted for reciprocable motion;

a latching arrangement to hold said contact block carrying member in a given position when the source of energy is connected to the transformer regulating system, said latching arrangement being actuated to release said contact block carrying member when the source is to be connected directly to the load;

biasing means to urge said contact block carrying member away from the given position to which it is constrained by said latching arrangement;

damping means to limit the speed of travel of said contact



block carrying member under the force of said biasing means;

a first stationary contact connected to the source and in constant engagement with said contact block;

a second stationary contact connected to a lead extending to the non-arcing tap switch arrangement;

a third stationary contact connected to the non-arcing tap switch arrangement through an impedance, said contact block being in engagement with said first, second and third stationary contacts when said contact block carrying member is constrained by said latching arrangement; and

a fourth stationary contact connected to the load,

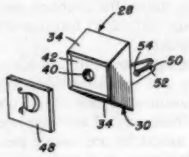
release of said contact block carrying member by said latching arrangement resulting in said contact block sequentially disengaging said second contact, engaging said fourth contact and disengaging said third contact.

4,185,178

CONTROL COVER FOR POWER WINDOW OR POWER DOOR LOCK

Anthony J. Drees, 2420 Talcolt Rd., Park Ridge, Ill. 60068

Filed Aug. 31, 1978, Ser. No. 938,454
Int. Cl.[2] H01H *9/28, 19/04*
U.S. Cl. 200—42 T **8 Claims**



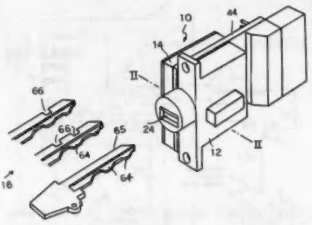
1. For use with a shaft mounted power actuating lever projecting outward from the interior paneling of a vehicle, a safety cover for precluding operating access to the shaft mounted power actuating lever, said cover including a knob adapted to overlie the lever, said knob having a lever receiving recess defined therein and an edge about said recess engageable with the paneling about the lever to completely enclose the lever, and mounting leg means fixed to said knob and projecting rearwardly therefrom for positioning along and in closely spaced relation adjacent the lever, said leg means including a shaft engaging configuration and being adapted to snap-lock to

the lever mounting shaft in conjunction with an engagement of the knob edge with the paneling for a retention of the knob as a cover means over said actuating lever.

4,185,179
KEY-SWITCH DEVICE

Takao Suzuki, Oume, and Yasuo Miyamae, Minano, both of Japan, assignors to Japan Aviation Electronics Industry, Ltd. and Sampo Lock Co., Ltd., both of Tokyo, Japan

Filed Feb. 2, 1978, Ser. No. 874,862
Claims priority, application Japan, Feb. 5, 1977, 52-12023
Int. Cl.[2] H01H *27/06*
U.S. Cl. 200—44 **3 Claims**

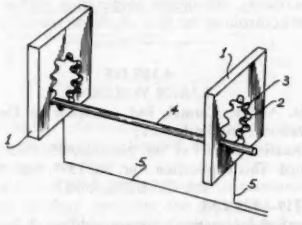


1. In a key-switch device comprising in combination a switch section and a set of associated keys, said switch section includes a casing having a cavity therein and an opening adapted to insert any of a set of associated keys; an actuating member having a head pivotably supported in said casing and a guide groove adapted to insert any of a set of associated keys; means for locking said actuating member to said casing; a printed circuit board having a plurality of terminals with associated contacts; a plurality of contact members associated to said contacts forming a holding means; and guide means having a plurality of grooves for sliding said holding means therein, and said set of associated keys have portions for releasing said locking means from said casing and for actuating selected holding means.

4,185,180
VIBRATION SENSING DEVICE

Francis J. Anderson, Dublin, Ireland, assignor to Institute for Industrial Research & Standards, Dublin, Ireland

Filed Jun. 27, 1978, Ser. No. 919,519
Claims priority, application Ireland, Jun. 27, 1977, 1306/77; Jul. 29, 1977, 1584/77; Oct. 12, 1977, 2086/77
Int. Cl.[2] H01H *35/14;* **G08B** *13/00*
U.S. Cl. 200—61.45 R **16 Claims**

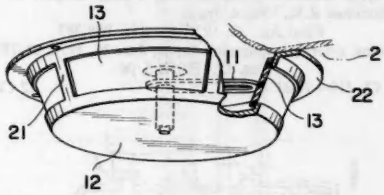


1. A vibration sensing device comprising:
a non-conductive base support member;
a pair of spaced apart electrically conductive plates upstanding from the base support member and electrically insulated from each other;
an annular track formed in each plate by a hole symmetrical about its central axis; and
a single elongated electrically conductive bar, symmetrical in cross-section mounted between the plates on the annular tracks, the cross-sectional area of the bar relative to the area of the hole being such as to permit movement of the bar off the annular tracks on vibration of the device, the said bar and annular tracks forming part of an electrical circuit.

4,185,181
MICROWAVE OVEN

Yoichi Kaneko, Tokorozawa; Katsuhiro Kimura, Tokyo; Mitsuru Watanabe, Yokohama; Tadashi Funamizu, Matsudo, and Itsuo Kikuchi, Ibaragi, all of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Japan

Filed Oct. 17, 1977, Ser. No. 843,035
Claims priority, application Japan, Oct. 18, 1976, 51-123825
Int. Cl.[2] H05B *9/06*
U.S. Cl. 219—10.55 F **9 Claims**

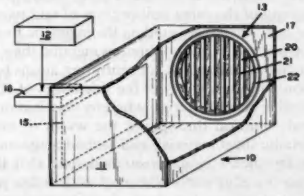


1. A microwave oven including an oven chamber having walls and a microwave energy radiating means disposed in the oven chamber for radiating microwave energy fed from a microwave source into the interior of the oven chamber, characterized in that the microwave energy radiating means comprises a rotatable rod extending into the oven chamber through a hole located substantially in the center of one wall of the oven chamber, a rotating conductive arm having one end secured to the central rod and extending transversely thereto, a conductive plate having the center thereof coincident with the axis of the central rod, and supporting means supporting the conductive plate in the vicinity of the one wall and substantially parallel thereto so that the rotating arm is interposed between the one wall and the conductive plate, and openings for radiating microwave energy into the oven chamber being provided at least at the periphery of the conductive plate.

4,185,182
MICROWAVE OVEN APPARATUS

Werner Rueggeberg, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Jul. 3, 1978, Ser. No. 921,467
Int. Cl.[2] H05B *9/06*
U.S. Cl. 219—10.55 F **3 Claims**



1. A microwave oven, comprising:
(a) a conductive wall structure defining a heating chamber adapted to be excited by a microwave energy source;
(b) a microwave energy source coupled to said chamber;

(c) a circular conductive plate having a plurality of linear, parallel, conductive strips affixed to one surface and having a circular conductive strip affixed to its periphery, said plate mounted in a recessed position in one wall of said chamber so that said linear strips face the interior of said chamber and so that the edges of said strips lie flush with the wall of said chamber in which said plate is mounted, said plate adapted to be rotated along its transverse axis by a motor means;

(d) motor means for rotating said plate; and

(e) said microwave energy source and said plate cooperating for providing a microwave heating field in said chamber and for affecting said energy field by the plate rotation so uniform heating may be provided in said chamber.

4,185,183

INDUCTION HEATING APPARATUS WITH ADJUSTABLE FLUX CONCENTRATORS

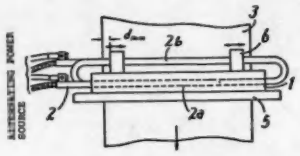
Yoshiyuki Kamimoto, Kitakasuragi, Japan, assignor to Toyo Aluminum K.K., Osaka, Japan

Filed Jun. 23, 1977, Ser. No. 809,287

Claims priority, application Japan, Jun. 26, 1976, 51-75748

Int. Cl.² H05B 5/06

U.S. Cl. 219—10.61 R **12 Claims**



1. An induction heating apparatus for induction heating a continuous metallic sheet material having a given width through relative displacement in the longitudinal direction of said induction heating apparatus and said continuous metallic sheet material, said apparatus comprising:

high frequency supply means;

high frequency induction coil means coupled to said high frequency supply means and including a turn of winding formed of two coil portions each extending along the same surface of said continuous metallic sheet material in the lateral direction of said continuous metallic sheet material to exceed the side edges of said continuous metallic sheet material for supply of high frequency magnetic flux to said continuous metallic sheet material;

first magnetic flux concentrating means provided in the vicinity of one coil portion of said two coil portions for concentratively guiding the magnetic flux of said one coil portion to said continuous metallic sheet material, said first magnetic flux concentrating means extending along said one coil portion to exceed the side edges of said continuous metallic sheet material; and

second magnetic flux concentrating means provided in the vicinity of the other coil portion of said two coil portions for concentratively guiding the magnetic flux of said other coil portion to said continuous metallic sheet material, said second magnetic flux concentrating means being provided locally in the vicinity of the side edges of said continuous metallic sheet material, whereby distribution of heating is made uniform throughout the width of said continuous metallic sheet material; said second magnetic flux concentrating means being positioned such that the distance d from the edge portion thereof to the edge portion of said continuous metallic sheet material satisfies the following equation;

$$d = \frac{1}{2}l - A(0 < A \leqq \frac{1}{2}a)$$

where l is the distance between the centers of said first and second magnetic flux concentrating means and a is the width of said second magnetic flux concentrating means.

4,185,184

APPARATUS AND METHOD FOR CONTROLLING THE INTERMITTENT RETRACTION OF THE ELECTRODE TOOL IN AN EDM MACHINE

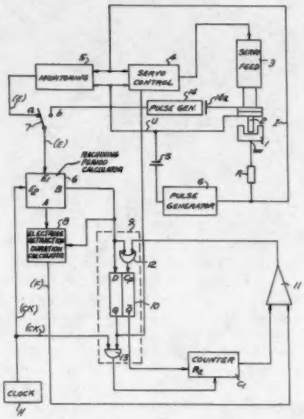
Jean Pfau, Geneva, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Jul. 20, 1977, Ser. No. 817,221

Claims priority, application Switzerland, Aug. 12, 1976, 10256/76

Int. Cl.² B23P 1/08

U.S. Cl. 219—69 G **8 Claims**



1. An apparatus for machining an electrode workpiece by means of intermittent electrical discharges occurring between said electrode workpiece and an electrode tool, wherein periodic retractions of said electrodes one relative to the other are effected as a function of existing machining conditions, said apparatus comprising means for relatively retracting said electrodes during a predetermined time interval, means for developing a first electrical magnitude representative of the machining rate from the instant a machining cycle is started, means for developing a second electrical magnitude representative of the time elapsed from the instant said electrodes are retracted, means for calculating the ratio of said first and second electrical magnitudes, means for detecting the instant when said ratio ceases increasing, and means cooperating with said detection means for controlling the next electrode retraction.

4,185,185

LASER WELDING

Joseph D. Adlam, Carmel, Ind., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 625,479, Oct. 24, 1975, abandoned. This application Apr. 20, 1977, Ser. No. 788,451

Int. Cl.² B23K 9/00

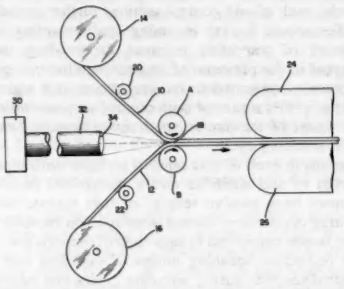
U.S. Cl. 219—121 LM **18 Claims**

1. A method for continuous seam welding of flexible strips of metallic sheet material having reflective surfaces while the strips are moving, comprising the steps of:

(a) directing the moving strips toward one another to form a converging Vee between the moving strips with the reflective surfaces facing one another;

(b) applying a force of above zero pounds at a location contiguous to the point at which the moving strips converge such that the moving strips overlay one another in intimate contact at the point of convergence;

(c) generating a laser beam of energy;
(d) providing an optical medium for focusing said laser beam;
(e) focusing said laser beam with said optical medium to produce a converging beam of laser energy; and
(f) directing said converging beam of laser energy into said converging Vee with the focal point located substantially



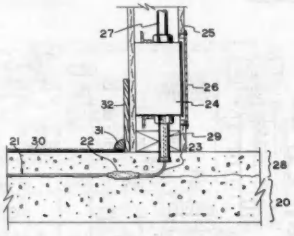
about said point of convergence, the geometry of said converging Vee being such that portions of said converging beam of laser energy that are incident upon the reflective surfaces of said moving strips at a location ahead of said point of convergence are reflected at least in part by the surfaces of said moving strips in a direction toward said point of convergence so that a continuous welded seam is established between the overlaid strips.

4,185,186

METHOD OF CONSTRUCTING AN ELECTRICAL RADIANT HEATING SYSTEM

Chester I. Williams, 347 Greenbriar, SE., Grand Rapids, Mich. 49506

Filed Dec. 8, 1977, Ser. No. 858,845
Int. Cl.[2] H05B *1/00*
U.S. Cl. 219—213 **1 Claim**



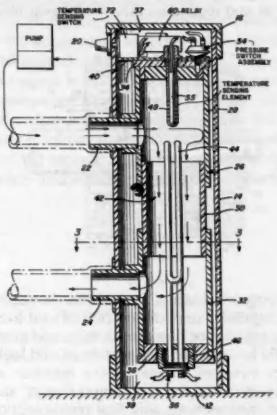
1. A method of constructing a floor system incorporating electric resistance heating elements, comprising:
constructing a sub-floor;
placing a grid of interconnected electric resistance elements on said sub-floor, including the placement of connecting portions extending upward from said sub-floor, at least certain of said elements being interconnected by welding and are covered by primary insulation to positions spaced from said welding producing adjacent initially exposed portions, and said welding and adjacent initially exposed portions are covered by separate insulating material, said separate insulating material being a plurality of overlaid heat-shrinkable tubes of different lengths and initially different diameters, the outer of said tubes being longer and extending beyond the ends of the inner of said tubes, and said tubes are slipped over said elements prior to said welding.

4,185,187

ELECTRIC WATER HEATING APPARATUS

David H. Rogers, 1210 Gateway Rd., Lake Park, Fla. 33403

Filed Aug. 17, 1977, Ser. No. 825,380
Int. Cl.[2] H05B *1/02, 3/82;* **F24H** *1/10*
U.S. Cl. 219—306 **1 Claim**



1. A heater for liquid circulated at a predetermined flow rate comprising a synthetic resin housing, said housing being vertically disposed and enclosing an elongated vertical chamber through which said liquid is conducted along an axial path, closure means connected to the housing at the upper and lower axial ends for sealing the chamber, an upper inlet conduit and a lower outlet conduit connected laterally to the housing adjacent the upper and lower ends through which the liquid enters and exits and flows downwardly through the chamber, an electrical heating element mounted on the lower closure means at the lower axial end of the housing and extending upwardly therefrom along said axial path within the chamber toward the inlet conduit and terminating substantially at the level of the botttom of the inlet conduit, temperature sensing means mounted on the upper closure means and projecting axially downwardly into the chamber toward the heating element, pressure switch means mounted on the upper closure means externally of the chamber, said temperature sensing means and pressure switch means energizing the heating element only during periods of flow of the liquid through the chamber when the liquid is below a predetermined temperature, said chamber being dimensioned to conduct said flow at the predetermined flow rate with substantially no significant storage of water in the chamber, an outer casing enclosing the housing, said inlet and outlet conduits projecting from said casing, and cap means connected to the casing in spaced relation to the closure means for protectively enclosing the heating element and the temperature sensing means and pressure switch means within the casing.

4,185,188

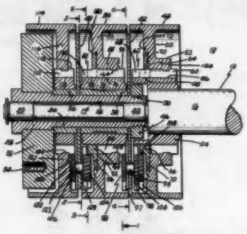
INTERNAL PINION REVOLUTION COUNTER AND METHOD OF ASSEMBLING THE SAME

Edward D. Sigl, Bluffton, Ind., assignor to Bowmar Instrument Corporation, Ft. Wayne, Ind.

Filed Sep. 28, 1978, Ser. No. 946,815
Int. Cl.[2] G06C *7/10;* **G01C** *22/00*
U.S. Cl. 235—139 A **17 Claims**

1. An internal pinion revolution counter comprising: a rotat-

able input shaft the revolutions of which are to be counted and having first and second axial sections; a bearing sleeve member rotatably supporting said first shaft section; a gear member rotatably mounted on said sleeve member and having first and second axial sections, said first section of said gear member having a first full tooth spur gear formed thereon; intermittent motion transfer means for drivingly connecting said second shaft section to said spur gear; a first number wheel mounted on said gear member for rotation therewith; said second section of said gear member having a spur gear segment formed thereon; a locking ring on said first number wheel and having a hub portion on said second section of said gear member; said



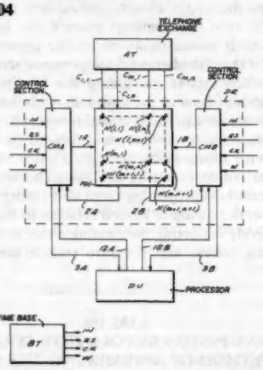
hub portion having an axial slot formed therein axially aligned with said gear segment, said hub portion of said locking ring having an outer annular locking cam surface, said gear segment extending axially beyond said hub portion of said locking ring; a pinion carrier mounted on said sleeve member; a transfer pinion rotatably mounted on said pinion carrier and having first and second axial sections, said first pinion section having a full tooth portion cooperating with said gear segment and a mutilated portion cooperating with said locking cam surface; and a second number wheel rotatably mounted on said sleeve member and driven by a second full tooth spur gear, said second pinion section being full tooth and cooperating with said second spur gear.

4,185,189

SIGNAL DETECTOR FOR MONITORING ELECTRIC CIRCUITS OF A TELECOMMUNICATION SYSTEM

Spiridione De Micheli, Turin, Italy, assignor to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Feb. 11, 1977, Ser. No. 769,270
Claims priority, application Italy, Feb. 13, 1976, 67326 A/76
Int. Cl.[2] G06F *11/00*
U.S. Cl. 235—304 **10 Claims**



1. In a telecommunication system including a multiplicity of signaling circuits carrying data represented by the presence or absence of direct current thereon,

the combination therewith of a detector for monitoring the state of conduction of said signaling circuits, comprising:

an orthogonal matrix of active and passive magnetic-core sensors divided into a multiplicity of rows and columns, said active sensors being provided with writing conductors connected to respective signaling circuits to be monitored;

substantially identical first and second control sections each including scanning means having outgoing leads coacting with the sensors of respective rows for transmitting interrogation and resetting currents to the sensors of each row during respective time intervals of a recurrent scanning cycle, each of said control sections further including amplifier means having incoming leads coacting with the sensors of respective columns for reading the states thereof in the presence of an interrogation current;

a processor connected to receive information signals from said amplifier means of both control sections indicative of the states of the interrogated active sensors detected in each scanning cycle;

test means in each of said control sections with inputs connected to said amplifier means thereof for receiving responses from passive sensors of said matrix, devoid of writing conductors, during interrogation thereof;

timing means connected to said control sections for enabling the respective scanning means of said first and second control sections during alternate cycles and enabling the test means of both control sections during phases of each cycle reserved for the interrogation of said passive sensors; and

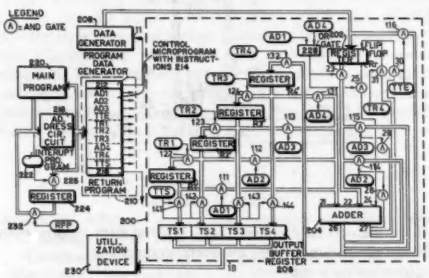
switchover means controlled by said timing means for transmitting supervisory signals from said test means of both control sections to said processor in lieu of information signals during a portion of each cycle in which no active sensors of said matrix are being interrogated.

4,185,190

DATA ACCUMULATION AND COMPRESSION APPARATUS

Gilles J. M. Bottard, Paris, and Michel Henry, Louvres, both of France, assignors to Compagnie Internationale pour L'Informatique, CII-Honeywell Bull (Societe Anonyme), Paris, France

Continuation of Ser. No. 625,662, Oct. 24, 1976, abandoned.
This application Feb. 8, 1978, Ser. No. 876,139
Int. Cl.[2] G06F *11/00*
U.S. Cl. 235—304 **11 Claims**



1. Apparatus for cumulative summing and compressing data items, each of which is comprised of b binary elements, said apparatus comprising:

(a) input buffer means for storing a data item to be processed at the beginning of each cycle;

(b) a plurality of n intermediate storing means coupled in serial positions 1 to n with respect to each other and each thereof comprising b storage locations;

(c) adder means;

(d) output storage means comprising n sections containing b storage locations;

(e) control means for processing each data item in a cumulative summing and compression cycle; and

(f) transfer means connected to said control means for interconnecting selectively said input storage means, said plurality of intermediate storing means, said adder means and said output storing means;

(g) said control means comprising:

(1) means for actuating said transfer means to connect said intermediate storing means in serial positions 1 to (n−1) and said input storing means, to said adder means, for actuating said adder means to add the contents of said intermediate storing means (n−1) and the data item to be processed at the beginning of each cycle and for transferring the result of this addition to said input storing means;

(2) means for actuating said transfer means to connect said intermediate storing means in serial positions 2 to n to said intermediate storing means in serial positions 1 to (n−1), and for transferring the content of each of said intermediate storing means in serial positions 2 to n to said intermediate storing means which precedes it in the serial order given;

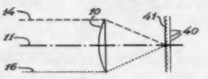
(3) means for actuating said transfer means to connect said intermediate storing means in serial position n and said input storage means to said adder means, for actuating said adder means to add the contents of said aforementioned intermediate and input storing means and for transferring the result of this addition to said intermediate storing means in serial position n; and

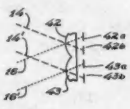
(4) means for actuating said transfer means to connect said intermediate storing means in serial positions 1 to n in parallel to respective ones of the n sections of said output storing means, for transferring the contents of said intermediate storing means to said output storing means so that, at the end of the Nth cumulative summing and compression cycle, the contents of said output storing means is a data item which has been compressed from a set of N data items which have been processed by said apparatus in N accumulation and compression cycles.

4,185,191
RANGE DETERMINATION SYSTEM

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 5, 1978, Ser. No. 912,688
Int. Cl.² G01J *1/20*
U.S. Cl. 250—204 **10 Claims**





1. Apparatus for producing an output that varies with the distance to an object comprising:

lens means;

radiation discriminating means, said lens means receiving radiation from the object and transmitting it to said radiation discriminating means, said radiation discriminating means producing a first radiation distribution pattern from radiation received from a first portion of said lens means and a second radiation distribution pattern from radiation received from a second portion of said lens means, the first radiation distribution pattern being in superimposition with respect to the second radiation distribution pattern at a first image plane when the object is at a predetermined distance from said lens means, the first and second radiation distribution patterns moving out of superimposition as the object moves to distances other than the predetermined distance, the amount of movement of the radiation distribution patterns from superimposition being indicative of the change of distance between the object and said lens means from the predetermined distance;

first radiation responsive detector means mounted proximate to the image plane to receive radiation in the first of the radiation distribution patterns and to produce a first output signal in accordance therewith;

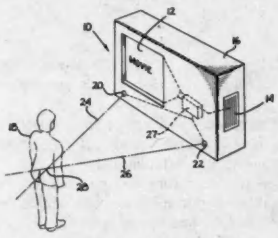
second radiation responsive detector means mounted proximate the image plane to receive radiation in the second of the radiation distribution patterns and to produce a second output signal in accordance therewith; and

means connected to said first and second radiation responsive detector means to receive the first and second output signals therefrom and to produce a resultant output indicative of the amount of movement of the first and second radiation distribution patterns from superimposition.

4,185,192
ALIGNMENT SYSTEM USING TWO PHOTOCELLS DIRECTED AT EACH OTHER

George R. Wagner, Santa Ana, Calif., assignor to Frank E. Maddocks, III and Dennis E. Belli, both of North Hollywood, Calif.

Filed Mar. 27, 1978, Ser. No. 890,277
Int. Cl.² G01B *11/26*; G01D *21/04*
U.S. Cl. 250—221 **2 Claims**



2. An optical switching apparatus comprising:

a first photo resistor element having an optical axis and a cone shaped field of view for sensing ambient light;

a second photo resistor element having an optical axis and a cone shaped field of view spaced from said first photo resistor element and positioned such that the optical axis of said second photo resistor element intersects the optical axis of said first photo resistor element;

means for communicating a signal from said first photo resistor element;

means for communicating a signal from said second photo resistor element;

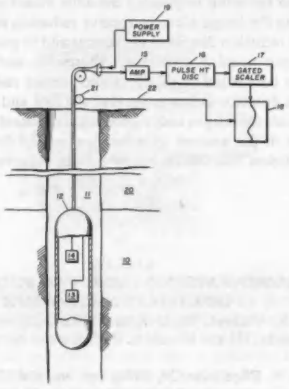
gate means for receiving said signals from said first and said second photo resistor elements and for providing an output signal only when said signals from said first and said second photo resistor elements are received substantially simultaneously, said gate means puts out no signal when the optical axis of said first photo resistor element is out of alignment with the optical axis of said second photo resistor element, and said gate means puts out a signal when the optical axis of said first photo resistor element is in alignment with the optical axis of said second photo resistor element.

4,185,193

METHOD FOR ASSAYING FOR NEUTRON-FISSION-PRODUCING ORES

Richard L. Caldwell, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 801,693, May 31, 1977, abandoned. This application May 18, 1978, Ser. No. 906,907
Int. Cl.[2] G01V *5/00*
U.S. Cl. 250—269 **4 Claims**



1. A method of assaying for neutron-fission-producing ore in the formations traversed by a borehole, comprising the steps of:

(a) locating a pulsed neutron source and a neutron detector at various levels of formations of interest suspected of containing a neutron-fission-producing ore,

(b) assaying each of said formations of interest by cyclically operating said source to irradiate each of said formations of interest with bursts of fast neutrons,

(c) detecting radiation from said neutron-fission-producing ore in each of said formations of interest,

(d) periodically stopping said assaying operations to monitor the output of said neutron source by the steps of:

(i) locating said source and detector at the level of a formation having no neutron-fission-producing ore,

(ii) operating said source to irradiate said monore-bearing information with bursts of fast neutrons, and

(iii) detecting delayed neutrons emitted by oxygen-17 in said nonore-bearing formation as a result of irradiation by neutrons, said delayed neutrons being indicative of the output of said source,

(e) recording the radiation from said neutron-fission-producing ores during assay operations at said various levels of formations of interest to obtain a log representative of the ore concentrations in said formations of interest,

(f) recording said delayed neutrons from oxygen-17 between assay operations to obtain a log of the neutron output of said source,

(g) linearly interpolating the log of the neutron output of said source over the time periods of said assay operations, and

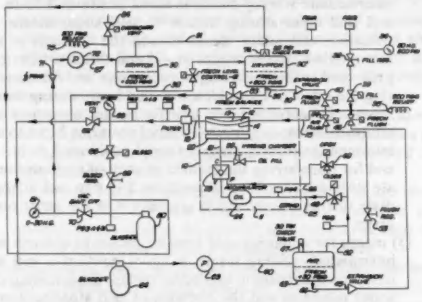
(h) correcting the log of radiation from said neutron-fission-producing ores obtained during assay operations in accordance with the linearly interpolated log of the output of said neutron source.

4,185,194

CLOSED CYCLE GAS HANDLING SYSTEM

Shao-Chi Lin, La Jolla, and Steve A. Wright, Playa del Rey, both of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Feb. 8, 1978, Ser. No. 875,990
Int. Cl.[2] G09G *13/00, 15/00*
U.S. Cl. 250—315.1 **4 Claims**



1. An improved system for supplying and recycling imaging gas to an electron radiographic imaging chamber wherein a successively openable and closable gap is provided between spaced electrodes to receive imaging gas while closed, which gas is thereafter flushed therefrom, said improved system comprising, in combination,

a pressurizable reservoir for storing said imaging gas and a condensable gas under sufficient pressure to liquify said condensable gas;

a liquid outlet from said reservoir with cooperating duct and valve means for receiving liquified condensable gas therefrom, vaporizing said gas and supplying same at selected intervals to said gap when said gap is closed so as to flush therefrom any atmospheric air trapped therein;

a pressuriable container having an inlet and cooperating pump and duct means for receiving said condensable gas and any air entrained therewith at selected intervals from said gap and for pressurizing same sufficiently to liquify said condensable gas and thus separate same from said air;

means for returning said condensable gas to said reservoir;

a gas outlet in said reservoir including duct means for supplying imaging gas therefrom to said closed gap so as to flush condensable gas from said gap and fill same with imaging gas;

further pump and duct means for receiving imaging gas and condensable gas from said gap and returning same under sufficient pressure to said reservoir to liquify and separate said condensable gas from said imaging gas; and

suitable controls for sequentially supplying condensable gas and imaging gas to said gap and recycling the respective gases for separation and re-use.

4,185,195

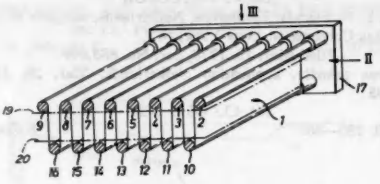
CONSTRUCTION OF COLLIMATORS AND/OR DETECTORS FOR PENETRATING RADIATION

John F. Moore, Lake Bluff, Ill., assignor to EMI Limited, Hayes, England

Filed Dec. 30, 1977, Ser. No. 865,879
Int. Cl.[2] G01T *1/20*
U.S. Cl. 250—361 R **11 Claims**

1. A method of constructing a multi-channel array of collimators and/or detectors for penetrating radiation, said channels being substantially side-by-side and extending in the same general direction, the method including the step of forming said channels by tensioning and winding a tape containing material which attenuates said radiation on a winding support including first and second sets of elongated finger members extending in a first direction, substantially parallel to the direc-

tion in which said channels extend, the members of a set being spaced apart in a second direction, transverse of said first direction and the sets being spaced apart in a third direction, substantially orthogonal to both said first and second directions; said tape being wound alternately over an elongated



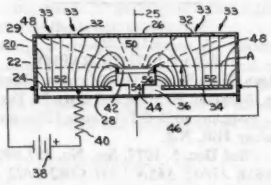
member of one set and under an elongated member of the other set and progressing along the members of both sets as winding proceeds, and the method further including the steps of rendering the array self-supporting and thereafter removing the array from the winding support.

4,185,196

IONIZATION SMOKE DETECTOR HAVING IMPROVED STABILITY AND SENSITIVITY

Michael Byrne, Farranshone, Ireland, assignor to General Electric Company, New York, N.Y.

Filed Jan. 13, 1978, Ser. No. 869,304
Int. Cl.² G01T 1/18
U.S. Cl. 250—381 **21 Claims**



1. An ionization chamber for a smoke detector comprising:
(a) means providing a chamber, said chamber having an inlet means for enabling an airflow into said chamber;
(b) said chamber having first and second electrodes;
(c) means for causing ionization within said chamber; and,
(d) means for establishing between said electrodes in said chamber an electric field having a relatively lower intensity at interior locations of said chamber and relatively greater intensity at locations spaced from the interior locations.

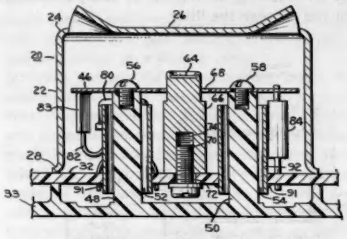
4,185,197

ARRANGEMENT FOR INHIBITING THE EFFECT OF EXTRANEOUS ELECTRIC FIELDS ON AN IMPROVED IONIZATION SMOKE DETECTOR

Michael Byrne, Farranshone, Ireland, assignor to General Electric Company, New York, N.Y.

Filed Jan. 13, 1978, Ser. No. 869,305
Int. Cl.² G01T 1/18
U.S. Cl. 250—381 **12 Claims**

1. In an ionization smoke detector having a substantially closed ionization chamber, said chamber having an aperture providing access thereto from outside of said chamber, said aperture having a cross-sectional area, a body extending through said aperture from outside of said chamber into said chamber, the improvement comprising:
electrically conductive means positioned in said chamber and extending about said body, said conductive means having a cross-sectional area which is coextensive with or greater than a cross-sectional area of said aperture whereby an electric field extending through said aperture



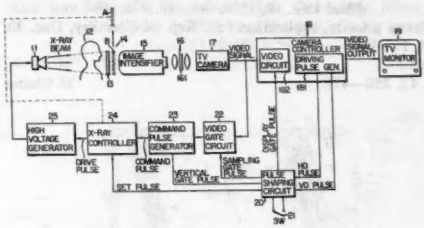
from outside of said chamber substantially terminates on said conductive body.

4,185,198

MEANS FOR GENERATING AN X-RAY EXPOSURE COMMAND IN RESPONSE TO A VIDEO SIGNAL COMPONENT

Yuichi Fujimoto, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Jun. 30, 1977, Ser. No. 811,847
Claims priority, application Japan, Jul. 8, 1976, 51-80418
Int. Cl.² H05G 1/30
U.S. Cl. 250—416 TV **10 Claims**



1. An X-ray apparatus for diagnosis which utilizes an X-ray television system, comprising video circuit means for designating and setting on an X-ray television device any partiular area of an X-ray image which is sent from a subject to be X-ray photographed; gate means for selecting a predetermined signal component from video signal corresponding to the X-ray image; signal detection means for detecting a variation of the selected video signal component and generating an X-ray exposure command signal when the variation of the video signal component reaches a predetermined level.

4,185,199

METHOD OF CONTINUOUSLY DETERMINING RADIATION WORKING LEVEL EXPOSURE

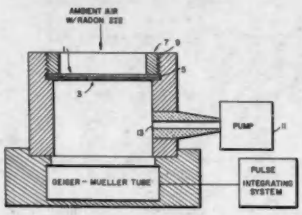
Robert F. Droullard, and Robert F. Holub, both of Lakewood, Colo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jun. 29, 1978, Ser. No. 920,513
Int. Cl.² G01T 1/16
U.S. Cl. 250—435 **6 Claims**

1. An indirect method for continuously determining the working level exposure of an individual to airborne alpha radioactivity from the daughter products of radon -222 gas by only counting the beta particles comprising the steps of:
(1) forcing the ambient gas towards and through an open face filter contained within a filter detector assembly to

filter out particulate matter including alpha radon -222 daughter products;

(2) after filtering, using the detector of the filter detector assembly for detecting the number of beta particles emitted from and through the filter;



(3) electronically counting the detected beta particles;

(4) correcting for any inherent error obtained in the count of beta particles; and

(5) converting the corrected count to working level exposure of alpha particles.

4,185,200

APPARATUS FOR LOADING AND UNLOADING CASSETTES FOR X-RAY FILMS

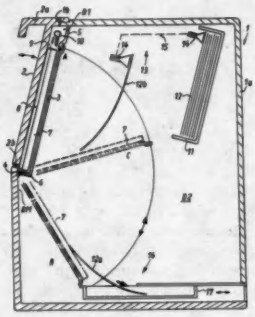
Jürgen Müller, and Heinrich Färber, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,119

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758980

Int. Cl.[2] **G11B** *1/00*

U.S. Cl. 250—471 **10 Claims**



1. Apparatus for introducing photosensitive material, particularly X-ray films, into and for evacuating such material from containers of the type having two sections movable relative to each other between open and closed positions and being normally locked to each other, comprising a housing having a sealable opening for admission and removal of containers; a partition movable to and from a first position in which said housing and said partition define a first compartment for reception of a locked container via said opening and a second compartment which is sealed from said first compartment in said first position of said partition; means for unlocking the container in said first compartment; and means for moving said partition and one section of the container in said first compartment in sealed condition of said opening between said first position, a second position in which photosensitive material can be evacuated from between said sections into said second compartment, and a third position in which photosensitive material can be introduced between said sections in said second compartment.

4,185,201

X-RAY DETECTOR

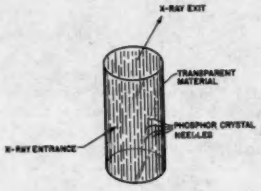
Albert L. N. Stevels, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1978, Ser. No. 885,669

Claims priority, application Netherlands, Mar. 28, 1977, 7703295

Int. Cl.[2] **G01J** *1/58*

U.S. Cl. 250—483 **8 Claims**



1. An X-ray detector comprising an X-ray detection element and a detection device responsive to fluorescent radiation generated in said X-ray detection element, said X-ray detection element comprising a fluorescent material having a short afterglow and a high sensitivity for the X-ray radiation to be detected, said fluorescent material comprising at least one of the phosphors Y_2SiO_5:Ce, $Y_2Si_2O_7$:Ce or $Y_3Al_5O_{12}$:Ce.

4,185,202

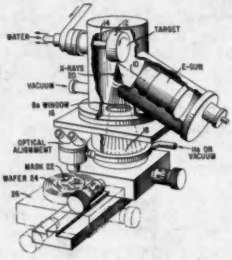
X-RAY LITHOGRAPHY

Robert E. Dean, High Bridge; Dan Maydan, Short Hills; Joseph M. Moran, Berkeley Heights, and Gary N. Taylor, Fanwood, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 5, 1977, Ser. No. 857,380

Int. Cl.[2] **A61K** *27/02;* **A61N** *5/00;* **C08J** *1/02;* **G21G** *5/00*

U.S. Cl. 250—492 A **20 Claims**



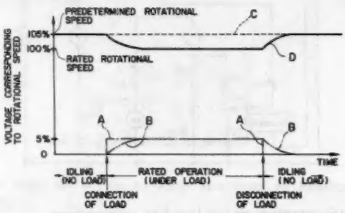
1. In combination in a high-resolution x-ray lithographic system designed to irradiate an x-ray mask member that is adapted to be positioned in said system in close proximity to a substrate coated with an x-ray-sensitive resist material, said system comprising an x-ray source, and a low-attenuation chamber for propagating x-rays from said source to irradiate said mask member, characterized in that said system includes

means for establishing in the space between said mask and said resist material a gas flow that constitutes a controlled atmosphere that is distinct and separate and of different gaseous composition from the atmosphere maintained in said chamber.

4,185,203
CLOSED LOOP ROTATIONAL SPEED CONTROL SYSTEM FOR TWIN-SHAFT TYPE GAS TURBINE ELECTRIC GENERATOR

Tohru Takeuchi, Zushi, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Apr. 19, 1978, Ser. No. 897,678
Claims priority, application Japan, Apr. 23, 1977, 52/46977
Int. Cl.[2] F02C *9/04*; G05D *13/00*
U.S. Cl. 290—40 C **10 Claims**



1. A closed loop rotational speed control system for a primer mover of an electric generator, said system including, a fuel control valve for controlling the fuel flow rate supplied to the prime mover; a rotational speed sensing means for producing a signal corresponding to and representative of the rotational speed of the prime mover; and a valve control signal generator for generating a control signal with which the fuel control valve is controlled, by comparing the magnitude of the signal corresponding to and representative of the rotational speed and a reference signal; which the improvement comprises:

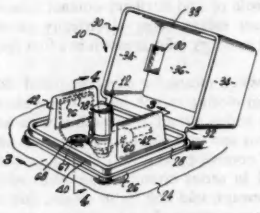
(a) load detecting means for producing a first signal proportional to load of the prime mover; and

(b) reference signal generating means for generating said reference signal in accordance with said first signal, said reference signal being selected to present a level corresponding to a higher level than a rated rotational speed of the prime mover when said first signal corresponds to no load.

4,185,204
MOTOR VEHICLE WITH REMOTE BATTERY CONNECTOR

Raoul G. Fima, Mission Viejo, Calif., assignor to Jumpak Products, Inc., Anaheim, Calif.

Filed Jan. 30, 1978, Ser. No. 873,363
Int. Cl.[2] H02G *3/00*
U.S. Cl. 307—10 R **3 Claims**



1. A motor vehicle having an electrically conductive metal body structure, an internal combustion engine mounted on said body structure, an electric starter motor mounted on said body structure and operably connectable to said engine, an electric storage battery having first and second battery terminals mounted thereon, a first conductor connecting said first battery terminal to said body structure, and a second conductor connecting said second battery terminal to said starter motor, wherein the improvement comprises:

an aperture in said body structure at a location where said first and second battery terminals are not readily accessible;

a single remote terminal post extending through said aperture, said terminal post being suitable for engagement by and connection to a jumper cable;

a generally rectangular mounting box made of insulating plastic material and comprising a base, a pivotably movable cover member hingedly connected to said base, detent means for releasably securing said cover member in a predetermined closed position with respect to said base in which said terminal is shielded by said cover member, and a pair of upstanding guide walls integrally formed with said base, disposed on opposite sides of said terminal and supportively engageable by said cover member when said cover member is in said predetermined position;

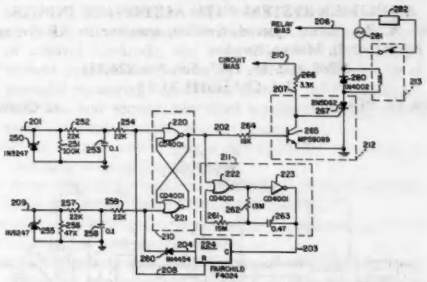
fastener means for engaging said terminal post and thereby securing said terminal post and said mounting box to said body structure; and

an insulated cable connecting said terminal post to said second battery terminal, said cable having sufficient current carrying capacity to jump start said engine, whereby said engine can be jump started by connecting a first jumper cable to said terminal post and connecting a second jumper cable to said body structure.

4,185,205
REMOTE LOAD CONTROLLER

Neil H. Jagoda, Framingham; John S. Ballas, Newton, and Klaus Kubierschky, North Reading, all of Mass., assignors to American Science & Engineering, Inc., Cambridge, Mass.

Filed May 9, 1978, Ser. No. 904,341
Int. Cl.[2] H04B *3/54*
U.S. Cl. 307—38 **25 Claims**



1. A load controller apparatus for switching at least one electrical load into and out of operative electrical connection with a load circuit, said apparatus comprising:

memory means for generating a stop cycle control signal in response to a memory time-out signal and for generating a start cycle control signal in response to at least a first load control signal, said memory means including means for generating a stop cycle control signal in response to a second load control signal;

cycle timing means for generating said time-out signal at a particular time delay after the initiation of a start cycle control signal by said first load control signal, and applying said time-out signal to said memory means to generate a stop cycle control signal;

switch means responsive to said start cycle control signal to switch said load to a first switch position in relation to said load circuit and responsive to said stop cycle control signal to switch said load to a second switch position; and

input error correction means for operating said memory

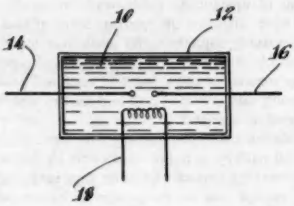
means to generate a particular cycle control signal in response to simultaneously applied first and second load control signals.

4,185,206

HIGH VOLTAGE CONTROL DEVICES

Joseph M. Proud, Wellesley Hills; James J. Auborn, Groton, both of Mass., and Richard A. Bessett, Derry, N.H., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 26, 1976, Ser. No. 661,677
Int. Cl.[2] H01B *1/06;* H01H *29/06, 33/68*
U.S. Cl. 307—117 8 Claims



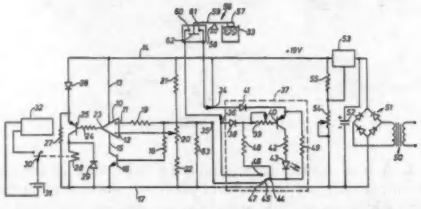
1. In an electrical system having a voltage source and a load connected in series with the source through a power bus, an improved thermostatic device adapted to activate or inactivate said load connected in series in said bus comprising a high voltage control device comprising a housing, molten sulfur contained within said housing, means for effecting heat exchange with said molten sulfur, at least two spaced electrodes contained within said liquid and each of said electrodes extending from said housing.

4,185,207

AMPLIFIER SYSTEM WITH ALTERNATE INPUTS

Nils Å. Bengtsson, Bjarred, Sweden, assignor to AB Svensk Nivakontroll, Malmo, Sweden

Filed Aug. 15, 1977, Ser. No. 824,831
Int. Cl.[2] H01H *35/18*
U.S. Cl. 307—118 16 Claims



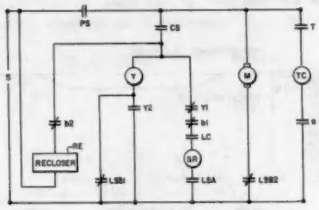
1. An amplifier system having an amplifier, a sensor and an interface between said sensor and amplifier, said amplifier having a reference input terminal and a second input terminal, said interface having an output terminal and comprising means responsive to said sensor for producing a voltage selectively above or below the voltage at said reference input terminal, two-way switch means for selectively connecting said output terminal to said second input terminal of said amplifier, whereby the output of said amplifier has a high or low level depending upon the state of said sensor, and an output circuit connected to the output of said amplifier, said two-way switch means connected to selectively open the connection between said second input terminal and said output terminal and to connect the second input terminal directly to said sensor.

4,185,208

ANTI-PUMP CIRCUIT BREAKER

James W. McMillen, Jr., Wilkins Township, Allegheny County, and James D. Finley, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 14, 1978, Ser. No. 877,780
Int. Cl.[2] H01H *71/72*
U.S. Cl. 307—140 7 Claims



1. An anti-pumping circuit breaker, comprising:

(a) separable main contact means which may be in either an opened or closed state;

(b) electrically operable close initiation means for changing the status of said separable main contact means from opened or closed;

(c) a source of control power;

(d) chargeable mechanical energy means interconnected with said separable main contact means and said close initiation means for supplying the power, when charged, to close said separable main contact means upon command from said close initiation means;

(e) first status means disposed in cooperating relationship with said mechanical energy means and having the characteristic of being electrically non-conductive when said mechanical energy means is discharged and electrically conductive when said mechanical energy means is charged;

(f) second status means also disposed in cooperating relationship with said mechanical energy means and having the characteristic of being electrically non-conductive when said mechanical energy means is charged and electrically conductive when said energy mechanical means is discharged;

(g) main contact means status means disposed in cooperation with said main contact means and having the characteristic of being electrically non-conductive when said main contact means are closed and electrically conductive when said main contact means are opened;

(h) electrically operable auxiliary relay means with auxiliary contact means for controlling the electrical conduction characteristic of said auxiliary contact means, said auxiliary contact means being electrically conductive only when said auxiliary relay means is in a first energized state; and

(i) closing switch means for energizing said close initiation means, said closing switch means being electrically connected in series circuit relationship with said auxiliary relay means and said second status means all across said source of control power, said closing switch being also connected in series circuit relationship with said close initiation means, said first status means, said main contact means status means and said auxiliary contact means all across said source of control power for energizing said close initiation means for thus discharging said chargeable mechanical energy means for thus closing said separable main contact means only when said closing switch means, said first status means, said main contact means status means and said auxiliary contact means are simultaneously in a state of electrical conduction, said latter condition only occurring while said first status means is in a said

conducting state and said closing switch means is in said conducting state.

4,185,209

CMOS BOOLEAN LOGIC CIRCUIT

Dana C. Street, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 2, 1978, Ser. No. 874,601
Int. Cl.[2] H03K *19/08, 19/12, 19/22, 19/30*
U.S. Cl. 307—218 **4 Claims**

		"A"	
		I	O
"B"	I	HI	LOW
	O	LOW	LOW

1. A logic circuit to perform functions of Boolean logic comprising:

a plurality of input terminals to receive respective logic signals and an output terminal, including a first input terminal which receives a first logic signal, a second input terminal which receives a second logic signal, and a third input terminal which receives a third logic signal, said third logic signal being inverted with respect to that of said second logic signal;

a first diode having respective anode and cathode terminals connected between a first of said plurality of input terminals and said output terminal,

a second diode having respective anode and cathode terminals connected between a second of said plurality of input terminals and said output terminal, and

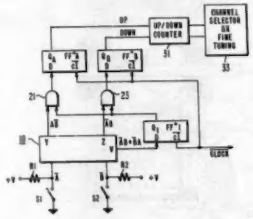
a field effect transistor having a pair of conduction path terminals and a control terminal, a first conduction path terminal of said field effect transistor connected to the anode electrode of said first diode, a second conduction path terminal of said field effect transistor connected to the cathode electrode of said first diode, and said control terminal of said field effect transistor connected to said third input terminal.

4,185,210

CONTACT DE-BOUNCING CIRCUIT WITH COMMON MODE REJECTION

Borys Zuk, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 18, 1978, Ser. No. 907,289
Int. Cl.[2] H03K *5/18*
U.S. Cl. 307—232 **8 Claims**



1. The combination comprising:

a plurality of input signals capable of assuming one binary state or the other binary state;

a first logic gate responsive to said input signals for producing a first output of first binary significance only when one of said input signals is in one binary state and all the other input signals are in the other binary state;

a first bistable element having a set state and a reset state responsive to the signal at said first output; means for placing, at a time t_1, said first bistable element in said set state only when said first output is of first binary significance;

means responsive to said one of said input signals and to the state of said first bistable element for producing a signal coupled to a second bistable element having a set state and a reset state; and

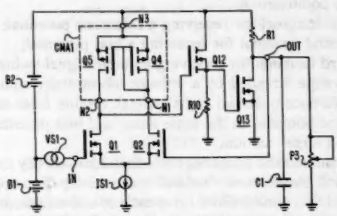
means for placing said second bistable element in its set state, at a time t_2, subsequent to time t_1, only when said one of said input signals is in said one binary state and said first bistable element is in said set state.

4,185,211

ELECTRICAL CIRCUITS

Nicholas Kucharewski, Lebanon, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 9, 1978, Ser. No. 868,229
Int. Cl.[2] H03K *5/18;* **H03F** *3/45*
U.S. Cl. 307—351 **12 Claims**



1. In combination:

first, second and third transistors, each having first and second electrodes and a controlled conductivity principal current conduction path therebetween and having a third or control electrode, the conductivity of its principal current conduction path being controlled responsive to potential appearing between its first and third electrodes, said first and second and third transistors being of the same conductivity type as each other;

first and second power supply terminals for receiving an operating voltage therebetween;

an input terminal for signal at the third electrode of said first transistor and an output terminal for signal,

means connecting said output terminal for signal to the third electrode of said second transistor;

means connecting said first and second transistors in long-tailed-pair configuration including an interconnection of their respective first electrodes and first direct current conductive means connected between that interconnection and said first power supply terminal;

a node to which the second electrode of said first transistor connects;

current amplifier means having an input connection from the second electrode of said second transistor and having an output connection to said node, for converting the balanced currents from the second electrodes of said first and second transistors to a single-ended current;

means connecting said third transistor in common-first-electrode amplifier configuration including

a connection of the first electrode of said third transistor to said first power supply terminal, including

means direct coupling said node to the third electrode of said third transistor, and including

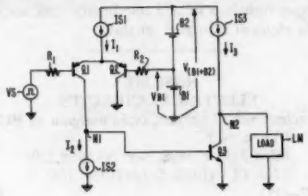
a connection of the second electrode of said third transistor to said output terminal; and

second direct current conductive means connected between said second power supply terminal and said output terminal.

4,185,212
LEVEL SHIFTING CIRCUIT

Arthur J. Leidich, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,515
Claims priority, application United Kingdom, May 23, 1977, 21687/77
Int. Cl.[2] H03K 17/00
U.S. Cl. 307—362 1 Claim

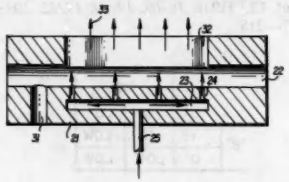


1. In combination:
a first terminal for receiving a reference potential;
a second terminal for receiving a bias potential;
a third terminal for receiving an input signal swinging over a range bounded by a voltage substantially equal to said reference potential and a voltage remote from said reference potential in the same sense said bias potential is, but in a larger amount;
first and second transistors of a first conductivity type and a third transistor of a second conductivity type opposite to said first conductivity type, each of said transistors having respective base and emitter and collector electrodes and having respective emitter-base and collector-base junctions, the collector and base electrodes of said second transistor having respective connections to said first terminal and to said second terminal, with said first conductivity type being such these connections reverse-bias the collector-base junction of said second transistor, the collector electrode of said first transistor being connected to the base electrode of said third transistor, and the emitter electrode of said third transistor being connected to said first terminal;
first current source means supplying current to an interconnection between the emitter electrodes of said first and second transistors, which current is of a polarity for forward-biasing at least one of their emitter-base junctions;
second current source means supplying a current of like polarity to a node at the collector electrode of said third transistor;
resistive means connecting said third terminal to the base electrode of said first transistor and having a sufficiently large resistance that when said input signal swings to said voltage substantially equal to said reference potential, that portion of the current from said first current source means flowing through the emitter-base junction of said first transistor and said resistive means causes a sufficiently large potential drop across said resistive means that transistor action is maintained in said first transistor, permitting a substantial remaining portion of the current from said first current source means to flow through the emitter-base junction of said third transistor, thereby placing said third transistor in conduction to conduct, as collector current, the current applied from said second source means away from the node at its collector electrode; and
load means connected to the node at the collector electrode of said third transistor for conducting away such of the current from said second current source means as does not flow as collector current through the collector electrode of said third transistor.

4,185,213
GASEOUS ELECTRODE FOR MHD GENERATOR

Edward P. Scannell, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed Aug. 31, 1977, Ser. No. 829,506
Int. Cl.[2] H02N 4/02
U.S. Cl. 310—11 17 Claims

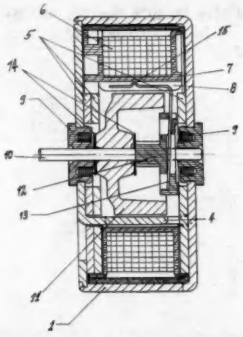


1. An MHD system having a duct through which a plasma stream may be passed, means for producing a magnetic field across said duct, and an electrode assembly comprising:
an electrode positioned in the side wall of said duct adjacent to said plasma stream;
means for providing an ionizable gas;
said electrode having a cavity therein connected to receive the ionizable gas from said providing means;
antenna means in said cavity for radiating high frequency power therein to ionize said gas; and
said electrode having an emission opening for receiving said gas after ionization by said antenna means and for emitting it into said duct.

4,185,214
MINIATURE SYNCHRONOUS MOTOR WITH VIBRATION DAMPER

Hermann Gerber, Münchenwiler, and Hans Pfötscher, Murten, both of Switzerland, assignors to Sodeco-Saia AG, Murten, Switzerland

Filed Aug. 21, 1978, Ser. No. 934,719
Claims priority, application Switzerland, Aug. 31, 1977, 010590/77
Int. Cl.[2] H02K 5/24
U.S. Cl. 310—51 14 Claims

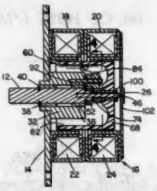


1. A miniature synchronous motor having a single damping body acting on the rotor, comprising a non-rotating damping body mounted for free rotation on the motor shaft, spring means acting on said body in one direction including a substantial radial component whereby said body is urged in an at least substantially radial direction against the shaft and radial play of the rotor is thereby prevented.

4,185,215
PERMANENT MAGNET SYNCHRONOUS MOTOR

Jean I. Montagu, Brookline, Mass., assignor to General Scanning, Inc., Watertown, Mass.

Filed May 11, 1978, Ser. No. 904,910
Int. Cl.[2] H02K 7/10
U.S. Cl. 310—83 11 Claims



1. A subfractional horsepower permanent magnet synchronous motor comprising

an annular stator, a cup-form permanent magnet rotor defining an internal cylindrical volume, said rotor being supported for rotation within said stator about the axis of said motor and with an annular air gap between said stator and said cup-form rotor, means including a stator coil adapted to be energized to rotate said rotor relative to said stator,

an output shaft coaxial with said rotor and extending outwardly from one end of said stator,

a stationary support bushing for said output shaft extending into said internal volume defined by said rotor,

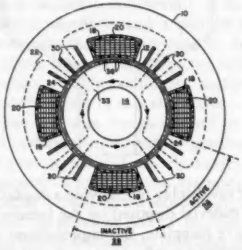
and a gear train mounted in the space between the inward end of said support bushing and the closed end of said cup-form rotor, and coupled between said rotor and said output shaft to provide a predetermined speed reduction ratio between said rotor and said output shaft,

said gear train comprising at least three gear members, at least a first gear member cantilever mounted from said stationary support bushing, a second gear member cantilever mounted from said closed end of said cup-form rotor, and a third gear member mounted from said output shaft, one of said gear members comprising a cluster of two gears mounted in offset relation to said output shaft and the other two gear members being coaxial with said output shaft.

4,185,216
CIRCUMFERENTIALLY-SEGMENTED MAGNET HOMOPOLAR DYNAMOELECTRIC MACHINE

Cecil J. Mole, Monroeville; Henry E. Haller, III, Pittsburgh, and Leonard N. Wedman, Franklin, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 29, 1978, Ser. No. 891,564
Int. Cl.[2] H02K 31/00
U.S. Cl. 310—178 8 Claims

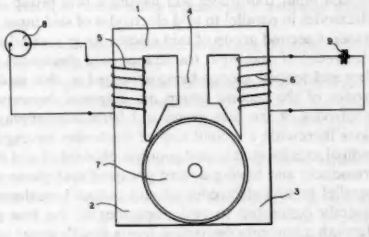


1. A dynamoelectric machine comprising a stator member having a cylindrical internal surface and a cylindrical rotor member supported for rotation coaxially of the stator member, said stator member having a plurality of circumferentially disposed recesses extending longitudinally in said internal surface, field windings disposed in said recesses and electrically connected in a manner to produce radially-directed magnetic fields in the circumferentially disposed spaces between the recesses, the magnetic fields alternating in polarity around the circumference of the machine, a plurality of stator conductors disposed in slots extending longitudinally in said internal surface in the spaces between the recesses, a plurality of rotor conductors extending longitudinally of the rotor member, current-collecting means at each end of the machine for making electrical contact with said rotor conductors at both ends thereof, and means for electrically connecting the current-collecting means to said stator conductors to form a complete electrical circuit including the stator conductors and the rotor conductors.

4,185,217
THREE POLE ELECTRIC MOTOR

Stefan Grosu, Bucharest, and Vasile Preda, Comuna Domnesti, both of Romania, assignors to Institutul de Cercetare si Proiectare Pentru Industria Electrotehnica, Bucharest, Romania

Filed Jun. 17, 1975, Ser. No. 587,701
Int. Cl.[2] H02K 3/00
U.S. Cl. 310—185 1 Claim



1. A three-pole electric motor comprising:

a stator;

a rotor rotatable relative to said stator, said stator being formed with only three poles disposed around said rotor and forming an air gap therewith, each of said poles being provided with a respective column extending away from said rotor, said columns being parallel to one another and including a pair of outer columns and an inner column, said columns being magnetically interconnected at their ends remote from said rotor;

a first coil wound on one of said outer columns and directly energized by a single-phase alternating-current supply source;

a second coil wound upon the other of said outer columns; and

a capacitor in circuit with said second coil, said capacitor being connected in series with said second coil across only a portion of said first coil.

4,185,218

PIEZOELECTRIC ACOUSTIC SURFACE WAVE FILTER COUPLER

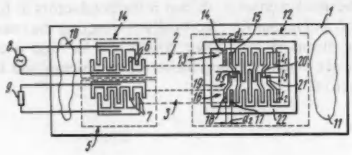
Alexandr S. Bagdasarian, ulitsa Popova, 10, kv. 12, Fryazino Moskovskoi oblasti; Jury V. Gulyaev, ulitsa Baikalskaya, 23, kv. 29, Moscow, and Anatoly M. Kmita, prospekt Mira, 22, kv. 231, Fryazino Moskovskoi oblasti, all of U.S.S.R.

Filed Jul. 11, 1978, Ser. No. 923,548

Claims priority, application U.S.S.R., Jul. 22, 1977, 2510210[1]

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—313 **2 Claims**



1. An acoustic surface wave filter comprising:

a piezoelectric substrate;

an input acoustic surface wave interdigital transducer arranged on said substrate and having electrodes exciting acoustic surface waves propagating through the individual acoustic channel of this transducer;

an output acoustic surface wave interdigital transducer arranged on said piezoelectric substrate and having electrodes receiving said acoustic surface waves through the individual acoustic channel of this transducer and converting them into a radio-frequency signal;

a coupling element for said acoustic channels of said input and output transducers located on said substrate, receiving said acoustic surface waves propagating through said acoustic channel of said input transducer and transferring them to said acoustic channel of said output transducer; said coupling element including a first row of electrodes having longitudinal axes located in said acoustic channel of said input transducer and having a first group of said electrodes in parallel to said electrodes of said input transducer, a second group of said electrodes in parallel to said electrodes of said input transducer; said electrodes of the first and second groups being arranged so that said electrodes of the second group are disposed between said electrodes of the first group and from overlapping portions therewith; a second row of electrodes having longitudinal axes located in said acoustic channel of said output transducer and having a third group of said electrodes in parallel to said electrodes of said output transducer and directly connected to said electrodes of the first group through a current conducting bus; a fourth group of said electrodes in parallel to said electrodes of said output transducer, said electrodes of the third and fourth groups being arranged so that said electrodes of the fourth group are disposed between said electrodes of the third group and form overlapping portions therebetween; a third row of electrodes having longitudinal axes located between the first and second rows and having a fifth group of said electrodes directly connected to said electrodes of the second group; a sixth group of said electrodes in parallel to said electrodes of the fifth group and directly connected to said electrodes of the fourth group; said electrodes of the fifth and sixth groups being arranged so that said electrodes of the sixth group are disposed between said electrodes of the fifth group and form therewith overlapping portions of a variable length defined by a specified impulse response of the filter; the distances between said longitudinal axes of the adjacent electrodes of this row differing from the distance between said longitudinal axes of the adjacent electrodes of the fifth and second rows.

4,185,219

TUBULAR INCANDESCENT LAMP

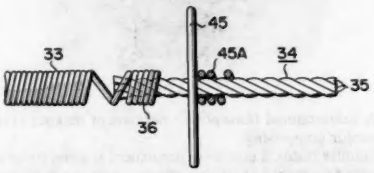
Nobuyuki Kamio, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 28, 1978, Ser. No. 919,835

Claims priority, application Japan, Jul. 4, 1977, 52-79041; Jul. 11, 1977, 52-81924; Jul. 21, 1977, 52-86699; Jul. 22, 1977, 52-87273

Int. Cl.[2] H01K *1/18*

U.S. Cl. 313—279 **11 Claims**



1. A tubular incandescent lamp comprising an elongated tubular envelope and a filament assembly extending longitudinally in said envelope and including a plurality of coil-shaped filaments, subcoils coupled with said filaments, connectors of strand wires and ring-shaped anchors wound around said connectors to support said extending filament assembly in said envelope, wherein the ends of said connectors are fitted into said subcoils and then said subcoils with said connector ends fitted are pressed from outside to fix them.

4,185,220

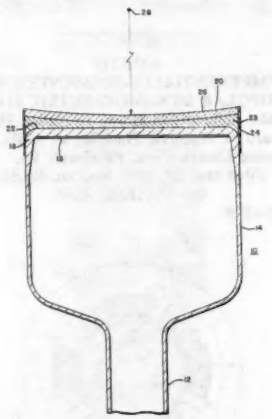
CATHODE RAY DISPLAY TUBE WITH CONTRAST ENHANCEMENT PANEL

Albert E. Oberg, Veteran, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 30, 1977, Ser. No. 811,746

Int. Cl.[2] H01J *29/89*

U.S. Cl. 313—478 **2 Claims**



1. A cathode ray display tube having a display faceplate with a luminescent material disposed on the interior tube side of a light transmissive faceplate, the improvement wherein a limited light transmissive contrast enhancement panel is optically coupled to and mounted directly on a light transmissive clear resin layer disposed on the exterior surface of the faceplate, which resin layer closely matches the index of refraction of the

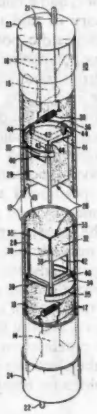
faceplate, and which contrast enhancement panel has a viewing surface which is spherical and concave with respect to a viewer, with the radius of curvature of the spherical viewing surface approximately equal to a predetermined viewer distance, and wherein the overall light transmissivity of the faceplate, resin layer and contrast enhancement panel is about 10–15 percent.

4,185,221

DOUBLE-ENDED FLUORESCENT LAMP HAVING A PARTITIONED ENVELOPE

Robert G. Young, Nutley, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 11, 1978, Ser. No. 923,599
Int. Cl.[2] H01J *61/10, 61/30, 61/42*
U.S. Cl. 313—485 **10 Claims**



1. An electric discharge lamp of the double-ended type comprising;

an elongated vitreous envelope that contains an ionizable medium and is sealed at each end,

lead-in conductor means extending through each of the sealed ends of said envelope,

a single electrode located at each end of said envelope and connected to the associated lead-in conductor means, and

a partition assembly disposed in the space between said electrodes and including a plurality of longitudinally-extending planar segments and a pair of transversely-extending members that are disposed at the respective ends of the planar segments and together with said planar segments define a single continuous discharge channel which extends from one of said electrodes to the other of said electrodes and thus forces the arc to traverse the envelope an odd number of times longitudinally and in a retroverted manner between said electrodes,

the planar segments of said partition assembly laterally extending in radial fashion from a substantially common axis to the walls of the envelope and having their longitudinal edges in snug-fitting relationship with said envelope walls so that the interior of the envelope is divided into an odd number of interconnected sectors which comprise the continuous retroverted discharge channel.

4,185,222

LUMINESCENT BIVALENT EUROPIUM-ACTIVATED BARIUM BOROPHOSPHATE AND DISCHARGE LAMP CONTAINING THE SAME

Petrus F. J. van den Boom, and Antonius M. J. H. Seuter, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 10, 1979, Ser. No. 2,434
Claims priority, application Netherlands, Jan. 13, 1978, 7800410
Int. Cl.[2] C09K *11/46;* **H01J** *1/63*
U.S. Cl. 313—486 **3 Claims**

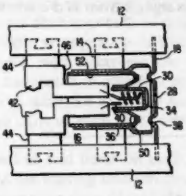
1. A luminescent bivalent europium-activated bariumborophosphate, characterized in that the borophosphate has a composition defined by the formula $Ba_{3-p}Eu_pBP_3O_{12}$, where $0.01 \leqq p \leqq 0.50$ and wherein Ba is replaceable by Sr and/or Ca in an amount not exceeding 20 mole% of the Ba.

4,185,223

ELECTRON GUN STRUCTURE

Yoshimitsu Anezaki, Fukaya, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kanagawa, Japan

Filed Sep. 21, 1977, Ser. No. 835,062
Claims priority, application Japan, Sep. 27, 1976, 51-114645
Int. Cl.[2] H01J *29/02*
U.S. Cl. 313—446 **1 Claim**



1. An electron gun structure for producing and directing at least one electron beam along a beam path, said gun structure comprising:

at least one cathode electrode, said cathode electrode comprising a cathode sleeve,

a plurality of grid electrodes including a first grid electrode,

an electron emissive coating formed on the closed end surface of said cathode sleeve adjacent said first grid electrode,

a cathode shield supporting said cathode sleeve and extending towards said first grid electrode,

a heater being positioned within said cathode sleeve, and

the front edge of said cathode shield being close to said first grid electrode such that the distance between them is smaller than the distance between said electron emissive coating and said first grid electrode, wherein

said first grid electrode is made in the form of a plate and has at least one bead and,

said cathode shield extends outside of said bead.

4,185,224

ALARM SYSTEM FOR DISPENSING SYSTEMS

Stephen L. Thompson, 5525 Altura, Denver, Colo. 80239

Filed Apr. 13, 1977, Ser. No. 787,202
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—684 **8 Claims**

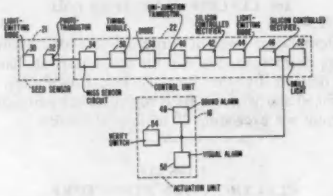
1. An alarm system for determining blockages or lack of product in a dispensing system comprising: a frame;

said frame having a control means which can simultaneously monitor and transmit signals affixed to said frame;

a sensor means connected to said control means wherein said sensor means simultaneously determines the distribution or non-distribution of product to a specific area and said

sensor means simultaneously and continuously send electrical signals to said control means wherein said control means continuously interprets said electrical signals from said sensor means;

an actuation means connected to said control means wherein said control means upon interpreting a malfunction signal indicating that said dispensing system is blocked so that no product may be dispensed or that said dispensing system



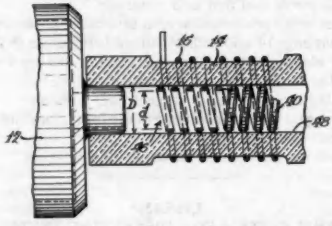
lacks the product to dispense from said sensor means initiates a signal to said actuation means which signal simultaneously activates an alarm means of said malfunction in said dispensing system; a verify means to reset said control means and alarm means wherein if said malfunction continues said alarm means will be re-activated by said simultaneous signals from said control means and said actuation means.

4,185,225

TRAVELING WAVE TUBE

Oskar F. Doehler, Glen Ellyn; Robert J. Espinosa, McHenry, and Gary G. Groshart, Des Plaines, all of Ill., assignors to Northrop Corporation, Rolling Meadows, Ill.

Filed Mar. 24, 1978, Ser. No. 891,696
Int. Cl.[2] H01J *25/34*
U.S. Cl. 315—3.5 **7 Claims**



1. A traveling wave tube having a wide bandwidth, high efficiency and high power capability comprising:

a single helix defining an interaction space formed by an inner diameter of the helix and an outer surface defined by an outer diameter of the helix, said helix formed by a metal element wherein the width of said element is greater at the inner diameter than at the outer diameter; and

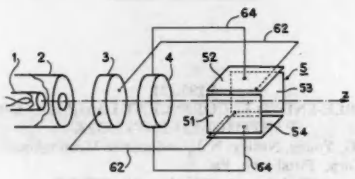
a dielectric barrel having a center bore receiving said metal helix wherein said outer surface of said helix is secured to said dielectric barrel.

4,185,226

SPRAY GUN FOR A DIRECT-VISION IMAGE STORAGE TUBE AND AN IMAGE-STORAGE TUBE USING THIS GUN

Roger Heymann, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 23, 1978, Ser. No. 889,281
Claims priority, application France, Mar. 29, 1977, 77 09293
Int. Cl.[2] H01J *29/50, 31/18*
U.S. Cl. 315—13 ST **3 Claims**



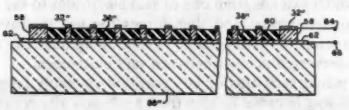
1. An adjustable memory-time direct vision image storage tube comprising in an evacuated envelope a record gun, a spray gun, a memory surface, and a luminescent output screen, the duration of the memory of said tube being adjusted by including means for providing a d.c. potential on a control grid of said spray gun, said spray gun comprising cathode means for producing a beam of electrons; said control grid being associated with said cathode for controlling the density of the said electron beam in accordance with the d.c. potential; accelerating electrode means for accelerating said beam of electrons and including means for accelerating said beam of electrons and including means for receiving potential which is constant; quadraopolar lens means positioned about the path of the accelerated beam, and formed by two pairs of flat plate electrodes occupying four of the faces of a parallelepiped, with the electrodes of a pair being opposite one another, and the electrodes of the pairs being perpendicular to one another about the beam; means for applying a greater potential to one of said pairs of electrodes than to the other of said pairs of electrodes, for causing said beam to form a spray shape beam; said means for providing the adjusted potential on said control grid thus controlling the density of the electrons in the spray beam, and an image's duration on said tube being proportional to said beam density.

4,185,227

CATHODE RAY TUBE WITH DUAL COLLECTOR LAYER STORAGE TARGET

Robert W. Morris, Cheney, Wash., assignor to Tektronix, Inc., Beaverton, Oreg.

Division of Ser. No. 567,941, Apr. 14, 1975, abandoned, which is a continuation of Ser. No. 502,020, Aug. 30, 1974, which is a continuation of Ser. No. 399,815, Sep. 24, 1973, which is a continuation of Ser. No. 117,710, Feb. 22, 1971, which is a division of Ser. No. 737,115, Jun. 14, 1968, Pat. No. 3,614,820. This application Aug. 8, 1977, Ser. No. 822,870
Int. Cl.[2] H01J *29/50, 31/00*
U.S. Cl. 315—13 ST **10 Claims**



1. Electron image storage apparatus comprising a cathode ray tube having a target and means including a cathode for producing an electron beam directed toward said target, which target includes

an electrically conductive layer forming a first collector electrode,

a layer of electrically insulative material disposed overlying said conductive layer, said insulative layer having a plurality of apertures at spaced-apart locations therein,

a second, mesh collector electrode of conductive material disposed on the side of said insulative layer remote from said conductive layer, said second collector electrode being substantially insulated from said first collector electrode,

a layer of substantially dielectric secondary emissive material contained in said apertures with areas of said secondary emissive material separated from each other by said insulative material,

said apparatus additionally comprising means for applying to said second collector electrode a voltage that is positive relative to said cathode, and means for applying to said first collector electrode a voltage that is negative relative to the voltage applied to said second collector electrode.

4,185,228

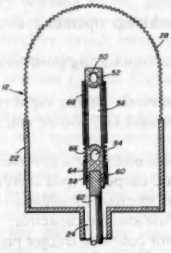
ELECTRODELESS LIGHT SOURCE WITH SELF-CONTAINED EXCITATION SOURCE

Robert J. Regan, Needham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 19, 1978, Ser. No. 952,765

Int. Cl.[2] H01J *65/00*

U.S. Cl. 315—39 **16 Claims**



1. An electromagnetic discharge apparatus comprising

an electrodeless lamp having an envelope made of a light transmitting substance, a main lamp cavity, and an exciter lamp cavity, said main lamp cavity enclosing a fill material which emits light upon breakdown and excitation and said exciter lamp cavity enclosing a material which emits ultraviolet radiation upon breakdown and excitation;

a termination fixture having an inner conductor and an outer conductor disposed around the inner conductor, the conductors having a first end adapted for coupling to a high frequency power source and a second end coupled to said electrodeless lamp; and

a power coupling means for electrically coupling high frequency power from said second end of said inner conductor to said main lamp cavity and said exciter lamp cavity,

said high frequency power when coupled to said exciter lamp cavity being sufficient to cause an ultraviolet glow discharge therein, and

said ultraviolet glow discharge and said high frequency power causing excitation of said main lamp cavity fill material.

4,185,229

GAS DISCHARGE PANEL

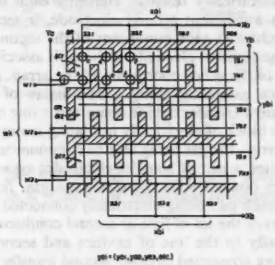
Kazuo Yoshikawa, and Shizuo Andoh, both of Kobe, Japan, assignors to Fujitsu Limited, Japan

Filed Jun. 28, 1977, Ser. No. 810,747

Claims priority, application Japan, Jul. 2, 1976, 51-79308; Jul. 30, 1976, 51-91696

Int. Cl.[2] H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—169.4 **26 Claims**



1. A gas discharge panel having a plurality of meander patterned shift channels, each said shift channel comprising a periodic sequence of adjacent discharge cells, each said discharge cell being defined between respective first and second electrodes on respective substrates and separated by a gas discharge space, said discharge cells of each said shift channel comprising a periodic arrangement of said electrodes on said respective substrates, said electrodes on each said substrate being selectively connected in common by buses arranged on each said respective substrate to define said periodic arrangement of discharge cells of each said meander patterned shift channel,

said arrangement of said buses on each said substrate comprising means for making said selective common connection of the respective ones of said electrodes on each said substrate without any one of said buses and said common connection means on each said substrate crossing over any other of said buses and said common connection means on the same one of said substrates, and

said panel comprising means for selectively coupling a discharge between adjacent ones of said discharge cells along each of said shift channels.

4,185,230

GAS DISCHARGE DISPLAY PANEL HAVING AN ARRAY OF DISCHARGE CAVITIES AND A SELF SCAN GLOW TRANSFER DEVICE FORMED BY CAVITIES IN THE ARRAY

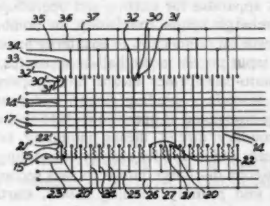
Frank Walters, Bury, England, assignor to Ferranti Limited, Hollinwood, England

Filed Dec. 14, 1977, Ser. No. 860,638

Claims priority, application United Kingdom, Dec. 18, 1976, 52969/76

Int. Cl.[2] H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—169.4 **10 Claims**



1. A gas discharge display panel including a plurality of

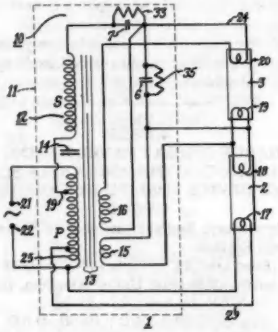
discharge cells comprising a block of electrically insulating material containing a plurality of gas-filled cavities arranged in a two-coordinate rectangular array, a first set of electrical conductors adjacent one end of each of the cavities and in contact with the discharge gas, each conductor of the set forming first electrodes of those cells associated with a unique value of one coordinate of the array, a plurality of second electrodes each being located adjacent the other end of an individual cavity and in contact with the discharge gas, a plurality of electrically resistive elements each of which is connected to a different second electrode, a second set of electrical conductors each conductor of the second set interconnecting the resistive elements of the cells associated with a unique value of the other coordinate of the array, and a glow transfer device extending along a coordinate of the array, wherein the glow transfer device comprises a line of gas-filled cavities in the block of electrically insulating material forming a line of the array, the gas being able to communicate between adjacent cavities, a pair of transfer electrodes associated with each cavity in contact with the discharge gas, first transfer electrodes of each pair being electrically connected to individual conductors of the set of first or second conductors extending orthogonally to the line of cavities and second transfer electrodes being connected to other second transfer electrodes of the pairs to form groups of equal numbers, corresponding electrodes of each group being connected to a transfer conductor such that the repetitive energisation of each transfer conductor in turn causes a discharge formed between a pair of transfer electrodes in one cavity to move along the line of cavities by the mechanism of glow transfer, changing the potential of each first transfer electrode in turn to cause striking or extinguishing of discharges in associated cells.

4,185,231

HIGH EFFICIENCY BALLAST SYSTEM FOR GASEOUS DISCHARGE LAMPS

Walter A. Colliton, Madisonville, Ky., assignor to General Electric Company, Schenectady, N.Y.

Filed May 2, 1978, Ser. No. 902,459
Int. Cl.[2] H05B *41/16, 41/232*
U.S. Cl. 315—189 **4 Claims**



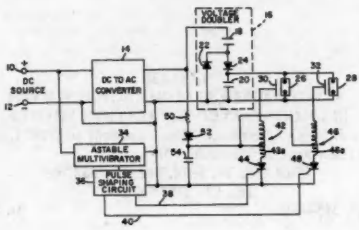
1. Ballast apparatus for starting and operating low pressure gaseous discharge lamps comprising, in combination, input terminal means for connection to an alternating current supply to provide input power to the ballast apparatus, high leakage reactance auto-transformer means having primary winding means and secondary winding means, said primary winding means being connected at opposite ends to said input terminal means, secondary circuit means including said secondary winding means and means for serially connecting a pair of low pressure gaseous discharge lamps to said secondary winding means and said primary winding means, starting capacitor means connected to said secondary circuit means for starting the serially connected gaseous discharge lamps, and resistor means connected across said starting capacitor means for reducing the peak voltage to ground of said lamp connecting means, said starting capacitor means having a capacitance of about 0.08 to 0.16 microfarads, said resistor means having a resistance of about 50 K ohms to 500 K ohms.

4,185,232

MULTIPLE FLASHLAMP OPERATING CIRCUIT

Jeffrey D. Ingalls, Ipswich, and Ellison H. Kirkhuff, Needham, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Aug. 28, 1978, Ser. No. 937,648
Int. Cl.[2] H05B *41/34*
U.S. Cl. 315—241 R **5 Claims**



1. A multiple flashlamp operating circuit comprising, in combination:

a source of DC voltage having positive and negative terminals;

a DC and AC converter having input means connected to the terminals of said DC source and having AC output means;

supply circuit means including a first storage capacitor connected to the AC output of said converter;

first and second arc discharge flashlamps connected in parallel across said first storage capacitor;

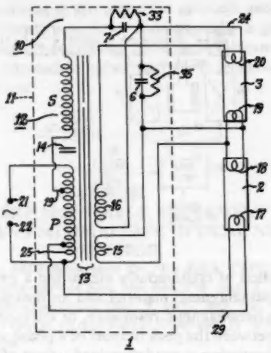
respective means for coupling trigger pulses to said first and second lamps; and

means connected to and energized by said DC source and the AC output of said converter for generating and alternately applying a succession of high voltage trigger pulses through said respective coupling means to said first and second lamps, whereby said first and second lamps are flashed in alternate sequence, said means for generating and alternately applying trigger pulses comprising: first and second pulse transformers having primary and secondary windings, each of said secondary windings being connected to a respective one of said coupling means; first and second gate-controlled switching devices respectively connected in series with said primary windings; a charging circuit including a second storage capacitor connected to the AC output of said converter, the primary of said first transformer and said series-connected first switching device being connected in parallel with the primary of said second transformer and said series-connected second switching device across said second storage capacitor; and pulse generating means connected to be energized by said DC source and having first and second pulse outputs connected to the control gates of said first and second switching devices respectively.

4,185,233
HIGH EFFICIENCY BALLAST SYSTEM FOR GASEOUS DISCHARGE LAMPS

David H. Riesland, Danville, Ill.; Edward E. Hammer, Mayfield Village, and Eugene Lemmers, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,889
Int. Cl.[2] H05B *41/16, 41/232*
U.S. Cl. 315—276 12 Claims



1. Ballast apparatus for starting and operating low pressure gaseous discharge lamps comprising, in combination, input terminal means for connection to an alternating current supply to provide input power to the ballast apparatus, high leakage reactance autotransformer means having primary winding means and secondary winding means, said primary winding means being connected at opposite ends to said input terminal means, operating secondary circuit means including at least a portion of said secondary winding means and means for serially connecting low pressure gaseous discharge lamp means to at least said portion of said secondary winding means and at least a portion of said primary winding means, capacitor means serially connected in said operating secondary circuit means for providing a leading current therein, said operating secondary circuit means connected to a tap on said primary winding means for supplying from said primary winding means a predetermined voltage in said secondary circuit means for reducing the ratio of said power input to the lamp light output, the portions of said primary winding means on opposite sides of said tap having the same polarity, said secondary winding means having a single polarity.

4,185,234
ISOLATED B+ VOLTAGE SENSING, HIGH-VOLTAGE SHUTDOWN

Scott H. Baker, Brockport, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

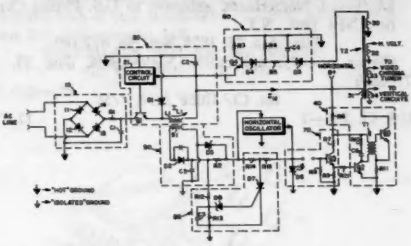
Filed Jul. 28, 1978, Ser. No. 928,671
Int. Cl.[2] H01J *31/00*
U.S. Cl. 315—411 8 Claims

1. In an Iso-Hot type television receiver having a horizontal deflection circuit returned to a Hot ground and powered by a first voltage supply coupled to the AC line, an isolated high-voltage shutdown circuit connected between an isolated voltage supply magnetically coupled to the first supply, and an Isoslated ground, the shutdown circuit comprising:

a resistive divider connected between an unregulated output of the isolated supply and an Isolated ground;

a zener diode connected to the divider; and

means coupled to the output of the horizontal oscillator, connected to the zener diode, and connected to the Isolated ground so that when the unregulated output of the isolated supply exceeds a predetermined value the output of the horizontal oscillator is coupled through a resistance

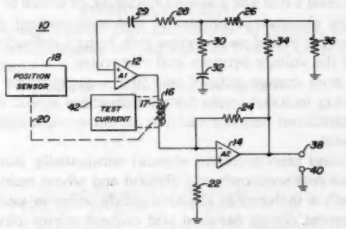


to the Isolated ground, the resistance being sufficiently low so as to disable the horizontal deflection circuit.

4,185,235
SERVO AMPLIFIER PROVIDING CURRENT TORQUE AND DYNAMIC PARAMETERS

Ernest D. D. Schmidt, Cornwell Heights, Pa., assignor to Schaevitz Engineering, Pennsauken, N.J.

Filed May 11, 1978, Ser. No. 905,009
Int. Cl.[2] G05B *11/01*
U.S. Cl. 318—677 5 Claims



1. In combination with a position detector for producing electrical signals corresponding to positions of a torque coil subject to movements resulting from acceleration forces which result in current being induced therein, a servo amplifier system for producing error signals for application to said torque coil to counteract the movements resulting from said acceleration forces, comprising:

a. a first amplifier having an input circuit;

b. means for applying said electrical signals from said position detector to said input circuit of said first amplifier;

c. a second amplifier having an input circuit and a low impedance output circuit;

d. means for connecting said torque coil from said first amplifier to said second amplifier free of any load impedance;

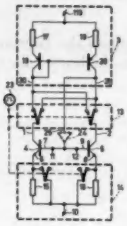
e. a feedback network connected from the output circuit of said second amplifier to the input circuit of said first amplifier;

f. utilization means connected to the output circuit of said second amplifier.

4,185,236
CURRENT STABILIZER

Rudy J. van de Plassche, and Antonius C. M. Schepens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1978, Ser. No. 872,109
Claims priority, application Netherlands, Jan. 27, 1977, 7700807
Int. Cl.[2] G05F *1/56, 1/58*
U.S. Cl. 323—1 12 Claims

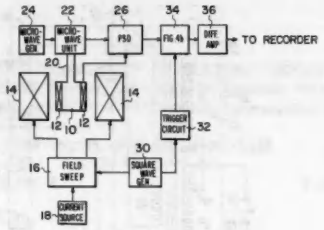


1. A current stabilizing arrangement comprising:
a first and a second current circuit;
a current mirror circuit for sustaining unequal currents with a fixed ratio relative to each other in said current circuits;
a first semiconductor element with a main current path and at least a first and a second electrode, of which at least the first electrode is situated in said main current path, the current in said main current path being a defined function of the voltage between said electrodes;
the main current path of said first semiconductor element being included in the forward direction in said first current circuit between said current mirror circuit and a first point;
a second semiconductor element substantially identical to said first semiconductor element and whose main current path is included in the forward direction in said second current circuit between said current mirror circuit and said first point;
both of said semiconductor elements being formed on one substrate;
a third circuit between a second point and said first point connected through said second and said first electrodes of said first semiconductor element;
a fourth circuit between a third point and said first point through the second and the first electrode of the second semiconductor element; and
means for sustaining equal voltages across said third and the fourth circuits, wherein said current stabilizing arrangement furthermore comprises:
first switching means for periodically interchanging the currents in said current circuits; and
second switching means including a resistor of substantially the same resistance value in said third and the fourth circuits, which circuit includes the two electrodes of that semiconductor element in which the smaller of the two currents flows, in such a way that the same one of said two currents flows through said resistor in said third and fourth circuit.

4,185,237
CONTINUOUS MEASUREMENT METHOD AND DEVICE

Hiromichi Uehara, and Satoshi Arimitsu, both of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Dec. 12, 1977, Ser. No. 859,516
Claims priority, application Japan, Dec. 16, 1976, 51-149804
Int. Cl.[2] G01R *33/08*
U.S. Cl. 324—317 4 Claims

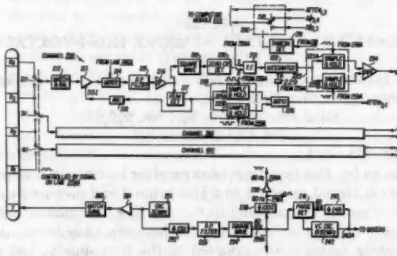


1. A method of continuously measuring a gas containing a gas phase paramagnetic material and an obstructing material by electron paramagnetic resonance, of the type in which the difference between the peak outputs of a phase sensitive detector (PSD) occurring at predetermined values of a sweep magnetic field indicates the paramagnetic material density, comprising the steps of continuously introducing said gas into an electron paramagnetic resonance cavity resonator, fixing said sweep magnetic field at two predetermined values at which peak outputs of said PSD are obtained, switching the magnetic field between said two values to detect said outputs at said two values, continuously measuring the density of said obstructing material, continuously obtaining the difference values between the values of the peak outputs thus detected and correcting said difference values by an amount corresponding to the density of said obstructing material.

4,185,238
APPARATUS AND METHOD FOR DETERMINATION OF SUBSURFACE PERMITTIVITY AND CONDUCTIVITY

Gerald S. Huchital, Brookfield, Conn., and Jacques-Rene Tabanou, Chevreuse, France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,127
Int. Cl.[2] G01V *3/18, 3/12*
U.S. Cl. 324—338 12 Claims



1. Apparatus for determining the dielectric constant and/or conductivity of earth formations of substantially a given volume and shape surrounding a borehole, comprising:
means for generating electromagnetic wave energy at a first location in the borehole;
means for detecting the relative attenuation of the electro-

magnetic wave energy at a second location in the borehole;

means for detecting the relative phase shift of the electromagnetic wave energy at a third location in the borehole;

means for detecting the relative phase shift of the electromagnetic wave energy at a fourth location in said borehole;

said second location being between said first and third locations, and said fourth location being between said second and third locations; and

means for determining the dielectric constant and/or conductivity of said formations of substantially a given volume and shape by combining the detected attenuation and the phase detected at either said third location or said fourth location.

4,185,239

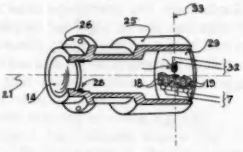
SUPER SHARP AND STABLE, EXTREMELY LOW POWER AND MINIMAL SIZE OPTICAL NULL DETECTOR

Jean H. Filloux, 8402 Sugarman Dr., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 646,274, Jan. 2, 1976, abandoned. This application Dec. 2, 1977, Ser. No. 856,791

Int. Cl.[2] G01R *33/02;* **G01L** *7/04;* **G01D** *5/30*

U.S. Cl. 324—259 **31 Claims**



1. An optical null detector for detecting the sign of the angular departure from a reference position or null, as well as the size of this angular departure in the near vicinity of the reference position, of a flat mirror about an axis of rotation parallel to its plane, including in combination

an objective located near and facing the mirror, with its optical axis normal to mirror when said mirror assumes reference or null position,

a set of two rectangular light sensors with their active surfaces located in, or very nearly in the focal plane of the objective, on one side of and along a line crossing the optical axis and perpendicular to the axis of rotation of mirror, adjacent edges of said sensors being closely spaced and centered with respect to optical axis, said sensors being electrically connected to produce an output signal equal to the difference between the light flux that they individually intercept,

a light source consisting of a small flat surface that radiates light from a small emitting area of said surface located in, the focal plane of the objective at a place opposite the narrow space between said light sensors with respect to the optical axis and at a distance from the optical axis less than the length of the adjacent edges of said light sensors, said emitting area slightly wider in its direction perpendicular to the direction of the adjacent edges of light sensors than the width of the inactive space between light sensors, said light source radiating light in a beam substantially directed toward said objective, said light beam reflected by mirror forming image of said emitting area overlapping equally said light sensors when mirror occupies null position.

4,185,240

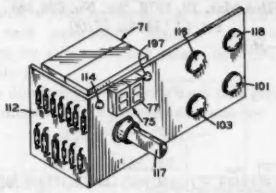
CHANNEL SELECTOR SYSTEM

Lowell G. Atkinson, Indianapolis, and Edmund E. Kennedy, Shelbyville, both of Ind., assignors to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed May 16, 1977, Ser. No. 797,458

Int. Cl.[2] H04B *1/04, 1/54*

U.S. Cl. 325—25 **15 Claims**



1. A channel switching system including a single rotary multiposition manually operable channel selector switch for a transceiver to select one of a plurality of possible carrier frequencies in the transceiver receive mode of operation and a corresponding one of a plurality of possible transmit carrier frequencies in the transceiver transmit mode of operation including means operable in certain channel selecting switch positions only or precluding transmitter operation without impeding the transceiver receive mode of operation, the means for precluding transmitter operation being inoperable in other than the certain channel selecting switch positions, whereby both receive and transmit modes of transceiver operation are possible.

4,185,241

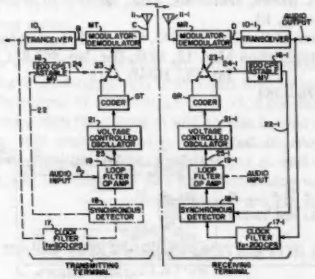
COMMUNICATIONS SYSTEM USING TIME POSITION MODULATION AND CORRELATION SLOPE DEMODULATION

Walter Ewanus, Ellicott City, and George A. McKay, Laurel, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 6, 1973, Ser. No. 367,659

Int. Cl.[2] H04B *7/00;* **H04K** *1/00*

U.S. Cl. 325—47 **16 Claims**



1. In a signaling system

(a) means for generating a carrier wave,

(b) means for generating code signals,

(c) phase modulating means connected to the output of said carrier wave generating means,

(d) said modulating means being connected to and driven by said code generator for phase-modulating said carrier wave,

(e) a voltage controlled oscillator for driving said code generator, and

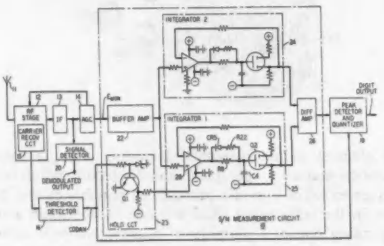
(f) means connected to said oscillator for varying the phase of said oscillator in accordance with the amplitude of intelligence signals.

4,185,242

SIGNAL-TO-NOISE RATIO MEASUREMENT OF INTERMITTENT SIGNALS

Clifford W. Schaible, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 20, 1978, Ser. No. 888,243
Int. Cl.[2] H04B *17/00*
U.S. Cl. 325—363 **4 Claims**



1. In a receiver for intermittent signals which comprises periods of radio signals separated by no-signal periods of noise and including means **(14)** responsive to the reception of radio signals and noise for generating signal strength signals, means **(16)** responsive to the reception of radio signals for recognizing a radio signal period and a peak difference comparator **(26, 19)** responsive to the recognizing means for determining the difference in levels of signal strength signals derived from a radio signal period and an adjacent noise period characterized by

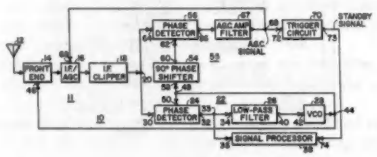
means **(24, 25)** for delaying the signal strength signals, means **(23, 28, C4)** responsive to the recognition of a radio signal period for storing the delayed signal strength signal derived from the prior noise period and means for applying the stored signal and the current delayed signal strength signal to the peak difference comparator.

4,185,243

METHOD AND APPARATUS FOR PROVIDING A STANDBY SIGNAL

Kenneth H. Brown, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 729,043, Oct. 4, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 885,841
Int. Cl.[2] H04B *1/16*
U.S. Cl. 325—364 **8 Claims**



1. In a coherent automatic gain control circuit having a gain controlled amplifier, an input signal derived from an antenna and a coherent amplitude detector, wherein a gain control voltage is derived from an output terminal of the coherent amplitude detector and the gain control voltage is applied to the gain controlled amplifier to control the gain of the gain controlled amplifier, the gain controlled amplifier having an output terminal, the coherent amplitude detector having an input terminal, the improvement comprising:

clipper means for noise limiting, said clipper means having an input terminal connected to the output terminal of the gain controlled amplifier, said clipper means having an output terminal connected to the input terminal of the coherent amplitude detector;

front end means for amplifying and down converting said input signal, said amplified and down converted input signal being fed to an input of said gain controlled amplifier;

phase locked loop means for generating a reference signal, said phase lock loop means being coupled to said output terminal of said clipper means, said reference signal from said phase locked loop menas being coupled to said front end means and said reference signal from said phase lock loop being coupled to the coherent amplitude detector;

trigger means for generating a standby signal, said trigger means having an input terminal and an output terminal, said input terminal being coupled to the output terminal of the coherent amplitude detector, said output terminal of said trigger means providing said standby signal thereon; and

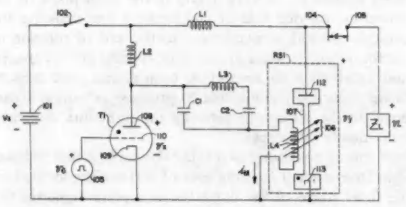
signal processor means for further processing the input signal, said signal processor means having first and second input terminals, said first input terminal being coupled to an output of said phase locked loop means, said second input terminal being coupled to said output terminal of said trigger means, said signal processor means being operably responsive to said standby signal.

4,185,244

HIGH VOLTAGE NANOSECOND PULSER USING A REPETITIVE SERIES INTERRUPTER

Maurice Weiner, Ocean Township, Monmouth County, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1978, Ser. No. 895,421
Int. Cl.[2] H03K *3/86, 3/55*
U.S. Cl. 328—67 **6 Claims**

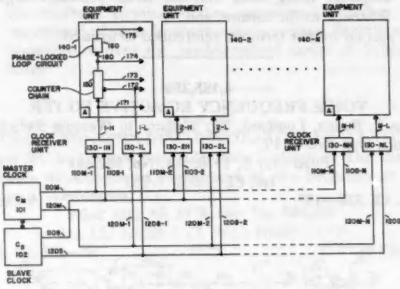


1. A pulse generator comprising a series loop connection of a power source, an inductive energy storage device, a spark gap, and a load device; and including a magnetic field controlled electronic switching device connected across the series connection of said spark gap and load element, and magnetic field generation means which produces a magnetic field for controlling said switching device, such that a pulse of said magnetic field causes said switching device to present an open circuit, thereby causing a spark to jump across said gap, so that an electrical pulse is delivered to said load device.

4,185,245
FAULT-TOLERANT CLOCK SIGNAL DISTRIBUTION ARRANGEMENT

Frank Fellinger, Delaware, Ohio, and Santanu Das, Stamford, Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 15, 1978, Ser. No. 906,087
Int. Cl.[2] H03K 5/00
U.S. Cl. 328—103 6 Claims



1. An arrangement for providing fault-tolerant distribution of clock signals to a plurality of equipment units comprising;

a plurality of clock receiver units, each unit associated with one of the equipment units and having first and second inputs, an output coupled to at least one distribution point in the associated equipment unit, each clock receiver unit including sequential logic means operative to produce at the clock receiver unit output a signal that is substantially a reproduction of a signal appearing at that clock receiver unit input that leads in phase a signal appearing at the other clock receiver unit input,

first and second sources of clock signals,

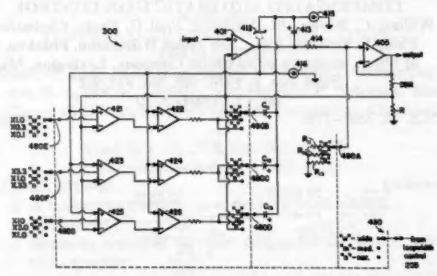
first clock signal transmission means for coupling clock signals from the first source to the first input of each of the plurality of clock receiver units, and

second clock signal transmission means for coupling clock signals from the second source to the second input of each of the plurality of clock receiver units.

4,185,246
CIRCUIT FOR REDUCING TRANSIENTS BY PRECHARGING CAPACITORS

Gene F. Schroeder, Sarasota, Fla., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Feb. 27, 1978, Ser. No. 881,460
Int. Cl.[2] H03K 1/10, 17/16
U.S. Cl. 328—165 16 Claims



1. For use in an electronic system which includes: a pair of terminals; a plurality of capacitors, each of said capacitors having one of its plates coupled to one of said terminals; switching means for coupling the other plate of a selected one of said capacitors to the other terminal; and variable gain means synchronized with said switching means and affecting the potential of said other terminal; a circuit for reducing transient signals that result from switching a different capacitor between said pair of terminals, comprising:

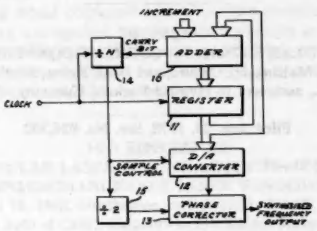
means for continuously generating a reference voltage associated with each of said plurality of capacitors not presently coupled between said pair of terminals, each said generated reference voltage being a function of the voltage which would appear across its associated capacitor when said associated capacitor is instantaneously switched by said switching means between said pair of terminals; and

means for continuously applying each said generated reference voltage across its associated capacitor.

4,185,247
MEANS FOR REDUCING SPURIOUS FREQUENCIES IN A DIRECT FREQUENCY SYNTHESIZER

Earnest R. Harrison, Jr., Crownsville, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 3, 1978, Ser. No. 866,743
Int. Cl.[2] H03K 13/32
U.S. Cl. 328—165 2 Claims



1. In a direct frequency synthesizer having a system clock, an adder, a register and a divider, the divider and the register being fed by the system clock and said adder, and the adder being fed by a digital control increment and said register, the improvement residing in a spurious frequency rejection circuit, said spurious frequency rejection circuit comprising

a digital to analog converter,

a summing means,

an amplifier, and

a voltage controlled oscillator, said voltage controlled oscillator having an output and being controlled by said amplifier, the output of said voltage controlled oscillator being summed within the output of said divider by said summing means, said amplifier being connected to receive and being responsive to the summed output of said summing means and the output of said digital to analog converter.

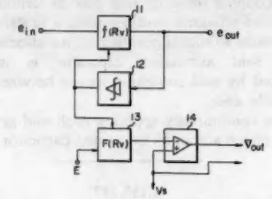
4,185,248
INPUT LEVEL SUPERVISORY SYSTEM FOR LEVEL REGULATOR

Hisaki Namura; Koichi Ohta, both of Kawasaki; Masao Takeda, Hachioji, and Kiyoshi Minematsu, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 31, 1978, Ser. No. 938,396
Claims priority, application Japan, Aug. 31, 1977, 52/104455
Int. Cl.[2] H03G 3/20
U.S. Cl. 330—2 6 Claims

1. A system for supervising the level of an input signal applied to a level regulator including a level adjusting circuit of a first transfer function having at least one first variable element and a terminal for inputting said input signal containing a pilot signal, and a control circuit, connected to an output

terminal of said level adjusting circuit, for extracting said pilot signal to control said first variable element so that the transfer amount of said input signal is varied, characterized in that said system comprises an input level supervisory circuit of a second transfer function having at least one second variable element, said input level supervisory circuit comprising an input terminal which is supplied with a constant input and said second



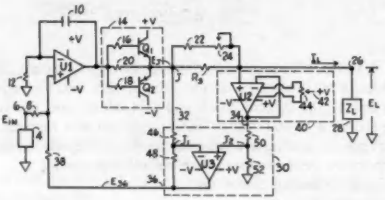
variable element having characteristics equal to those of said first variable element and being varied by said extracted pilot signal from said control circuit so that the transfer amount of said second transfer function is varied, wherein said second transfer function of said input level supervisory circuit has a reciprocal relationship with said first transfer function of said level adjusting circuit.

4,185,249

BIPOLAR SIGNAL TO CURRENT CONVERTER

James B. McKim, Jr., Oxford, and Denis Rehse, Stanhope, both of N.J., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 23, 1978, Ser. No. 936,302
Int. Cl.[2] H03F *1/34*
U.S. Cl. 330—85 **4 Claims**



1. A circuit for producing an output current through a load that corresponds to an input signal, comprising

an operational amplifier having an inverting input, a non-inverting input, and an output,

means referencing one of said inputs to ground,

an input terminal,

direct current conducting means connected between said input terminal and the other of said inputs of said operational amplifier,

a power amplifier having an input direct-current coupled to the output of said operational amplifier and having an output,

a first output terminal,

a current sensing resistor direct-current coupled between the output of said power amplifier and said first output terminal,

a closed loop differential amplifier having an inverting input, a non-inverting input, and an output,

means coupling one of said inputs of said closed loop differential amplifier to the output of said power amplifier,

a buffer amplifier,

means coupling said buffer amplifier between said first output terminal and the other of said inputs of said closed loop differential amplifier,

a coupling resistor direct-current connected between the output of said closed loop differential amplifier and the input of said operational amplifier to which said direct-current coupling means is connected, said latter input thereby acting as a summing point for current derived from a signal source, when present, and current from the output of said differential amplifier so as to produce the effect of an impedance approaching infinity in series with a load, when present, the points of connection of the inputs of said operational amplifier and said differential amplifier being such that the latter provides negative feedback to the former, and

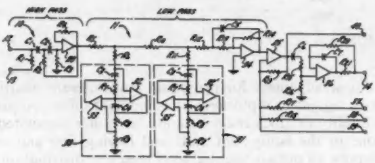
a second output terminal referenced to ground.

4,185,250

VOICE FREQUENCY RC ACTIVE FILTER

John F. Regan, Lombard, Ill., assignor to Wescom Switching, Inc., Oak Brook, Ill.

Filed May 3, 1978, Ser. No. 902,281
Int. Cl.[2] H03F *3/181*
U.S. Cl. 330—107 **9 Claims**



1. A voice-frequency RC-active filter comprising

a plurality of resistors and generalized impedance converter networks for synthesizing the frequency response of a preselected LC filter,

each generalized impedance converter network including a pair of operational amplifiers and a plurality of impedances Z1, Z2, Z3, Z4 and Z5 interconnected with said amplifiers to provide the network with a driving point impedance

$$Zi = \frac{Z1\ Z3\ Z5}{Z2\ Z4}$$

in which at least one of the impedances in both the numerator and the denominator of Zi includes a film-type resistor,

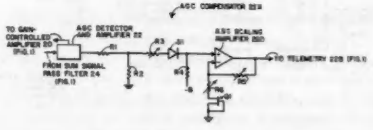
at least one of the film-type resistors included in the impedances Z1, Z2, Z3, Z4 and Z5 being functionally trimmed to tune the filter.

4,185,251

COMPENSATED AUTOMATIC GAIN CONTROL

William C. Brown, Jr., Littleton; Paul G. Crete, Chelmsford; Philip L. Sullivan, Acton, and James Williamson, Franklin, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jun. 5, 1978, Ser. No. 912,602
Int. Cl.[2] H03G *3/30*
U.S. Cl. 330—279 **4 Claims**



1. In a missile-borne receiver wherein an automatic gain control arrangement is used, temperature-compensated circuitry for producing a signal having a level proportional only

to the level of the input to such arrangement, such circuitry comprising:

(a) an operational amplifier having an input terminal, a feedback terminal and an output terminal;

(b) input means for connecting the output signal of the automatic gain control arrangement to the input terminal, the impedance of such input means varying inversely with temperature over a predetermined range of temperature; and

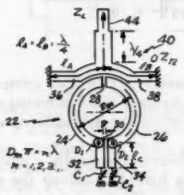
(c) feedback means for connecting the output terminal and the feedback terminal of the operational amplifier, the impedance of such feedback means varying directly with temperature over the predetermined range of temperatures.

4,185,252

MICROSTRIP OPEN RING RESONATOR OSCILLATORS

Horst W. A. Gerlach, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 10, 1978, Ser. No. 904,698
Int. Cl.[2] H03B 7/14, 9/12; H03H 13/00
U.S. Cl. 331—56 **28 Claims**



1. A microstrip circuit, which comprises:

first open ring microstrip resonator means for oscillating in its even mode and including first and second substantially semi-circular de-coupled microstrip lines electrically isolated and adapted to oscillate independently from one another and each having first and second ends spaced from and opposing one another, respectively.

2. A microstrip circuit, which comprises:

first open ring microstrip resonator means including first and second substantially semi-circular microstrip lines electrically isolated from one another and each having first and second ends spaced from and opposing one another, respectively; and

further comprising first and second active elements having a negative resistance characteristic and coupled respectively to said first ends of said first and second microstrip lines.

4,185,253

TEMPERATURE SENSITIVE RELAXATION OSCILLATOR

Robert W. Lade, Waukesha; Stanley V. Jaskolski, Sussex; Gordon B. Spellman, Mequon, and Herman P. Schutten, Elm Grove, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 27, 1978, Ser. No. 946,178
Int. Cl.[2] G01K 7/00; H03K 3/35
U.S. Cl. 331—66 **4 Claims**

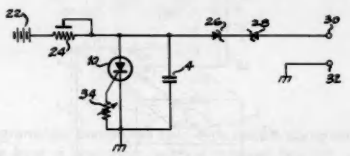
1. A temperature sensor comprising in combination:

a capacitor;

a thermally sensitive thyristor connected in parallel with said capacitor;

a current source connected in series with the parallel combination of said capacitor and said thermally sensitive thyristor to charge said capacitor until the voltage thereacross equals the breakover voltage of said thyristor, whereafter said capacitor discharges through said thyristor until the discharge current is less than the holding current of said thyristor, whereafter said capacitor is recharged, whereby the voltage across said parallel combination comprises an oscillatory output signal;

said breakover voltage increasing with decreasing temperature of said thyristor such that at a given low temperature said breakover voltage exceeds the maximum value of voltage applied across said thyristor whereby oscillation of said output signal ceases, whereby to afford a warning of said low temperature;



said breakover voltage decreasing with increasing temperature so as to require less charging of said capacitor whereby to diminish the amplitude of said oscillatory output signal, and thus afford a warning of high temperature; and

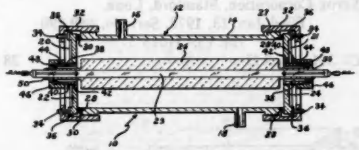
clipping means connected to said parallel combination and having a designated threshold level whereby to establish an operating range of temperatures of said thyristor above and below which no oscillatory signal appears at the output of said clipping means.

4,185,254

ANNULAR LASER HAVING ADJUSTABLE AND INTERCHANGEABLE LASER WINDOWS

Lawrence H. Hall, Northridge, and John R. Novak, Rodondo Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 13, 1977, Ser. No. 841,879
Int. Cl.[2] H01S 3/03, 3/092
U.S. Cl. 331—94.5 D **13 Claims**

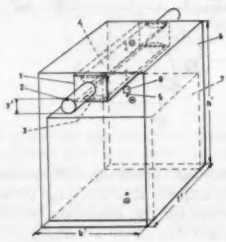


1. An annular laser comprising a cylindrically shaped body having a pair of ends and a hollow interior, means for permitting the introduction of laser reactants into said hollow interior of said laser body, a laser window located adjacent each end of said laser body, means operatively connected to said laser body for removably sealing each of said laser windows in position adjacent each of said ends of said laser body, respectively, means operatively connected to each of said sealing means for adjustably mounting each of said laser windows with respect to said laser body, reflecting means operatively aligned adjacent each of said laser windows, respectively, forming a resonant cavity therebetween and means for pumping said laser reactants, said pumping means being centrally located within said hollow laser interior along the longitudinal axis of said laser body, said pumping means being in sealed relationship with respect to said laser windows when said windows are in position adjacent said laser body, said laser being capable of operation when said laser windows are aligned in a preselected orientation.

4,185,255
SET-UP FOR A TRANSVERSELY EXCITED LASER OPERATING AT ATMOSPHERIC PRESSURE

Wilhelmus J. Witteman, and Bernard J. Reits, both of Hengelo, Netherlands, assignors to Stichting Voor Fundamenteel Onderzoek der Materie, Utrecht, Netherlands

Filed May 23, 1977, Ser. No. 799,604
Claims priority, application Netherlands, Jun. 3, 1976, 7605991
Int. Cl.[2] H01S *3/097*
U.S. Cl. 331—94.5 PE 4 Claims

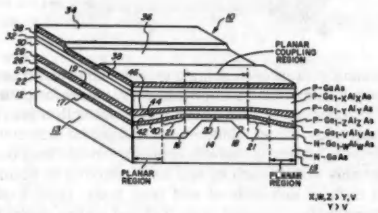


1. In a pulsed laser, including
a cavity resonator;
a pair of spaced substantially uniform field electrodes extending along said resonator;
a laser tube mounted within said resonator;
a generator for energizing said electrodes, and
means for interconnecting said generator to said electrodes the improvement comprising an electrically conductive housing enclosing said resonator cavity and said generator, said housing being attached to one of said electrodes thereby forming a conductor for one of said electrodes to provide a low-inductance connection thereto.

4,185,256
MODE CONTROL OF HETEROJUNCTION INJECTION LASERS AND METHOD OF FABRICATION

Donald R. Scifres, Los Altos; William Streifer, Palo Alto, and Robert D. Burnham, Los ALtos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 13, 1978, Ser. No. 869,190
Int. Cl.[2] H01S *3/19*
U.S. Cl. 331—94.5 H 28 Claims

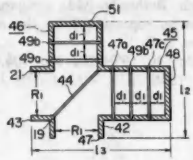


1. In a heterojunction injection laser, a substrate body having an elongated mesa formed on its surface, first, second, third, fourth and fifth integral layers of different compositions of semiconductor crystal material in integral contact with said substrate body, said second layer being the active layer of the laser, said layers being coextensive and laterally aligned across said mesa, each of said layers being of their thinnest cross-sectional extent and substantially coplanar above said mesa forming a branching directional coupling region between said second and fourth layers, said layers beyond said mesa being arched about said mesa and substantially co-planar with the surface of said substrate body, said layers having varying cross-sectional thicknesses between said coupling region and said substrate co-planar regions, said second and fourth layers having a lower index of refraction than said first, third and fifth layers and said second layer having a higher index of refraction than said fourth layer.

4,185,257
QUASIOPTICAL BAND REJECTION FILTER

Nobuo Nakajima, Yokosuka, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jun. 1, 1978, Ser. No. 911,574
Claims priority, application Japan, Jun. 10, 1977, 52-67820
Int. Cl.[2] H01P *1/20*
U.S. Cl. 333—208 7 Claims



1. A quasioptical band rejection filter comprising:
a 3dB hybrid for dividing and combining electromagnetic waves, one of ports of the hybrid being used as an input port;
a first resonator electromagnetically coupled with one of two ports of this hybrid to which the electromagnetic waves incident from the input port are outputted after being divided, the first resonator comprising a plurality of opposed coupling disks sequentially arranged in the direction of travel of the electromagnetic waves and a first reflector disposed opposite the last one of the coupling disks; and
a second resonator electromagnetically coupled with the other output port and comprising a plurality of opposed coupling disks sequentially arranged in the direction of travel of the electromagnetic waves and a second reflector disposed opposite the last one of the coupling disks, the number of coupling disks of the second resonator being larger than that of the first resonator by one;
the remaining port of the hybrid being used as an output port.

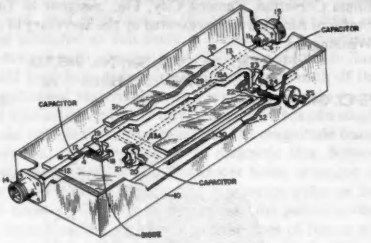
4,185,258
BROADBAND HIGH POWER BIAS CIRCUIT

Maurice Cote, Nashua, and Ralph E. Bauman, Londonderry, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed May 8, 1978, Ser. No. 903,466
Int. Cl.[2] H01P *1/15*
U.S. Cl. 333—262 8 Claims

1. A switch having an input and an output comprising:
a switching device alternately placed between conducting and nonconducting states to operate said switch and connect energy applied to said input to said output,
a hybrid coupler having a first branch connected to said switching device and a second branch connected to said switch output,
means for providing electrical short circuits at radio frequencies on all other branches of said hybrid coupler other than said first and said second branches to reflect energy in said other branches back into said switch, and
switch operating means connected to one of said other branches of said hybrid coupler for alternately switching said switching device between its conducting and nonconducting states to selectively operate said switch, said

hybrid coupler providing isolation between said operating means and energy passing through said switch by dividing



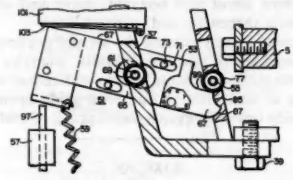
said energy input to said switch so that only a portion of said input energy is present in said branch to which said operating means is connected.

4,185,259

MAGNETIC CONTACTOR WITH AN ADJUSTABLE LATCH RELEASE

Arthur G. Fovargue, Orchard Park, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 19, 1978, Ser. No. 870,895
Int. Cl.[2] H01H *9/20*
U.S. Cl. 335—167 **6 Claims**



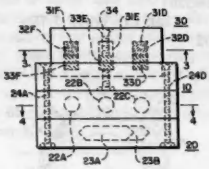
1. An electromagnetic contactor comprising stationary and movable contacts, electromagnetic means for moving the movable contact to the closed position, operative means for moving the movable contact to the open position when the electromagnetic means is deenergized, the electromagnetic means comprising an electromagnet and an armature structure movable between energized and deenergized positions, a stop bracket on the side of the armature structure opposite the electromagnetic means, latch means for latching the armature structure in the energized position to hold the contacts in the closed position after the electromagnetic means is deenergized, the latch means comprising a latch lever pivotally mounted on the bracket, and movable between latched and unlatched positions of the armature structure, the latch lever being engageable with the armature structure for holding said structure in the latched position, bias means for biasing the latch lever in the latched position, delatching means for moving the latch lever to the unlatched position and comprising a latching electromagnet, pivot means for pivotally mounting the latch lever and comprising a pivot pin on the bracket, the latch lever comprises a pivot plate and a latch arm, the pivot plate being rotatably mounted on the pivot pin, and the latch arm being adjustably mounted on the pivot plate.

4,185,260

EXTERNALLY-PROGRAMABLE SWITCH

Lawrence P. O'Toole, 80 Steiner Ave., Neptune City, N.J. 07753

Continuation-in-part of Ser. No. 724,511, Sep. 30, 1976, Pat. No. 4,101,857. This application Jul. 3, 1978, Ser. No. 921,848
Int. Cl.[2] H01H *9/00*
U.S. Cl. 335—206 **7 Claims**



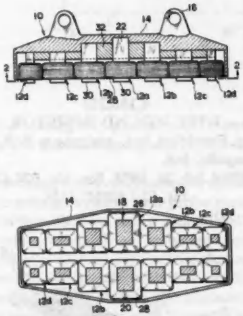
1. A programable, compound reed-type switch comprising: a mounting base; a stationary portion secured beneath said mounting base; said stationary portion comprising at least two layers of reed-type switches positioned in at least two planes just below said mounting base; and a moveable portion rotatably secured above said mounting base, said moveable portion comprising at least one layer of magnets positioned in a plane just above said mounting base to pass over and actuate certain of said reed-type switches in the course of its rotation.

4,185,261

ELECTROMAGNETIC LIFTING DEVICE

Toshio Nagata, Tokyo, Japan, assignor to Kohan Sendan Kikai Kabushiki Kaisha, Japan

Filed Jul. 27, 1978, Ser. No. 928,596
Int. Cl.[2] H01F *7/06*; B66C *1/06*
U.S. Cl. 335—291 **9 Claims**



1. An electromagnetic lifting device comprising:
- a plurality of magnetic core means having a plurality of magnetic pole faces in a common horizontal plane,
- at least one electric coil adapted to energize each of said magnetic core means,
- non-ferromagnetic means disposed between said magnetic core means and adapted to rigidly connect adjacent ones of said magnetic core means,
- non-ferromagnetic suspension means adapted to hold said plurality of magnetic core means in a suspended relationship therefrom;
- said magnetic core means having different areas of said magnetic pole faces and being arranged in an array so that each having said different areas of magnetic pole faces is placed adjacent to each other and symmetrically with respect to the center line of said electromagnetic lifting device.

4,185,262
MAGNET DEVICE

Sadao Watanabe, Neyagawa; Mitsuru Itoh, Yawata; Tadashi Sakairi, Katano; Yasutomo Funakoshi, Sakai, and Kohji Hiya, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Saka, Japan

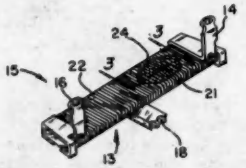
Filed Jul. 28, 1978, Ser. No. 928,971
Claims priority, application Japan, Aug. 1, 1977, 52-92747; Aug. 2, 1977, 52-93201
Int. Cl.[2] H01F 7/02
U.S. Cl. 335—302 12 Claims

1. A magnet device having magnetic poles of opposite polarities on the same surface, comprising a plurality of shaped plastic matrix magnet elements each having its axes of easy magnetization oriented in a predetermined direction, said plastic matrix magnet elements being joined together with their centers located substantially opposite to the associated magnetic poles and with their axes of easy magnetization extending substantially in the radial direction.

4,185,263
WIRE-WOUND RESISTOR

Robert L. Frey, Frankfort, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Jul. 20, 1978, Ser. No. 926,437
Int. Cl.[2] H01C 3/18
U.S. Cl. 338—301 12 Claims



1. A method of open circuiting a wire wound resistance element comprising:

(a) applying a wire in a number of turns to a length of electrically insulative strip to provide said wire wound resistance element,

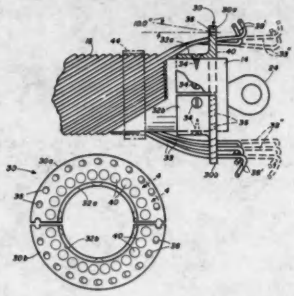
(b) applying an adhesive to a side of said resistance element not to be in contact with an electrical contact so as to bond said wire to said electrically insulative strip at a predetermined location, and

(c) severing at least one turn of said turns of wire at said predetermined location to open circuit said resistance element.

4,185,264
WIRE GUIDE AND METHOD FOR PRECONDITIONING BOUYANT ELECTRODES

William Chrastina, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 26, 1978, Ser. No. 955,725
Int. Cl.[2] B63B 21/56; H01B 7/12
U.S. Cl. 340—852 13 Claims



1. In combination with a flexible electrode adapted to be towed along its long axis, said electrode having forward and aft ends, a strength member, a bouyant sleeve surrounding said strength member, and a layer of helically laid wire strands fixed to the forward end of and covering said sleeve, a wire guide device comprising:

flange means fixed to said bouyant sleeve and extending radially therefrom substantially at the aft end of said electrode;

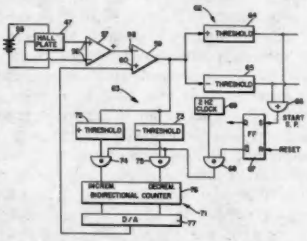
said flange means characterized by a plurality of wire guide openings extending therethrough and arranged in a circular pattern about said bouyant sleeve and substantially concentric therewith; and

said openings loosely passing the aft end portions of corresponding ones of said wire strands, whereby when said electrode is towed, excess wire in said helical layer works its way aft and through said wire guide openings while said guide device prevents unwrapping of said layer.

4,185,265
VEHICULAR MAGNETIC CODED SIGNALLING APPARATUS

Noel J. Griffin, Cincinnati; Larry D. Miller, Xenia; Gerald K. Squire, Middletown, all of Ohio, and Carl E. Knochelmann, Jr., Ft. Wright, Ky., assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Jun. 9, 1977, Ser. No. 805,189
Int. Cl.[2] G08G 1/09; E01F 11/00
U.S. Cl. 340—32 31 Claims



10. Apparatus for coupling a coded signal from a lane of a

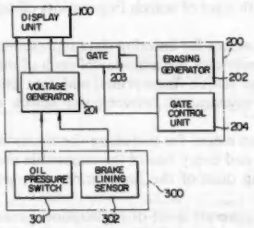
roadway to an automotive vehicle traversing the lane comprising a signalling device including: a plurality of polarity coded magnetic pole faces at differing spaced longitudinal regions along the lane, said pole faces at the spaced longitudinal regions being arranged so that there is substantially a magnetic flux null between each adjacent pair of the spaced longitudinal regions, said pole faces being arranged so that at each of the spaced longitudinal regions there is a magnetic field having a substantial amount of vertically directed lines of flux of a single polarity; said vehicle carrying a magnetic flux magnitude transducer positioned to be responsive to magnetic flux derived from the signalling device, said transducer being arranged so that it derives a waveform including a separate pulse as the transducer crosses over each of the regions, the pulses having polarities determined by the polarity of the lines of flux at the region crossed by the transducer, an odometer for deriving a signal indicative of vehicle travel distance, means for deriving first and second signals respectively indicative of the vehicle travelling in the forward and reverse directions, means responsive to the first and second signals, the odometer signal, and the waveform for preventing pulses of the waveform from being recognized as signalling device pulses while the vehicle is travelling over the signalling device in the reverse direction and while the vehicle is travelling over the signalling device toward a position in the signalling device where the vehicle began to travel in reverse.

4,185,266

DISPLAY APPARATUS FOR MOTOR VEHICLE

Noriyuki Nakashima, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya and Sharp Corporation, Osaka, both of, Japan

Filed May 26, 1977, Ser. No. 800,951
Claims priority, application Japan, Jun. 28, 1976, 51-76667
Int. Cl.[2] B60Q *1/00*; G02F *1/26*; G11C *11/22*
U.S. Cl. 340—52 F **6 Claims**



1. A display apparatus for a motor vehicle having an engine activation switch comprising:

an electric power source;

a display switch connected to said electric power source for supplying electric power during closure;

a light energy source connected to said electric power source through said display switch for producing light energy when said power is supplied;

an optical polarizer for polarizing the light energy from said light energy source;

an electro-optical ceramic for subjecting the light energy polarized by said optical polarizer to birefringence which is changed in accordance with the magnitude of an electric field, said electro-optical ceramic containing lead, lanthanum, zirconium and titanium, each having hysteresis by which the birefringence condition is stored after the removal of said electric field;

at least a pair of electrodes provided on the surface of said electro-optical ceramic and connected to said electric power source through said display switch for applying said electric field to said electro-optical ceramic;

an optical analyzer for analyzing the light energy subjected to birefringence by said electro-optical ceramic;

a sensor adapted to detect the condition of a motor vehicle; and

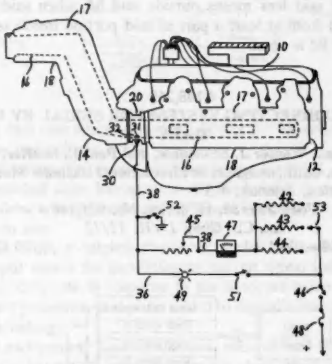
a control unit connected between said electric power source and said electrodes and connected to said sensor for changing the magnitude of said electric field to a value which is enough to cause said electro-optical ceramic to store the birefringence condition when the motor vehicle condition detected by said sensor exceeds a predetermined abnormal limit, whereby the abnormality in the vehicle is indicated through the change in color display, said display switch being connected to the engine switch for displaying the stored birefringence condition upon activation of said engine switch.

4,185,267

DETECTING WATER ON BOAT EXHAUST MANIFOLD

Luigi G. Oddo, Rte. 2, Box 270, Palm Bay, Fla. 32905

Filed May 17, 1978, Ser. No. 898,475
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—59 **9 Claims**



1. A device for sensing the presence of water within the exhaust system of the marine engine, said device comprising in combination:

probe means for being removably coupled through a section of the engine exhaust system, said probe means including a first conductive element and a second conductive element juxtaposed therewith but insulated therefrom, with both said first and second conductive elements operably extending into an exhaust gas chamber within the exhaust system, whereby water within the exhaust system will provide a lower impedance path between said first and second conductive elements; and

circuit means having an input operably coupled to said probe means for sensing and displaying any reduction in the effective impedance between said first and said second conductive element.

4,185,268

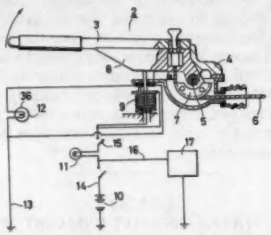
PILOT LAMP MECHANISM OF A PARKING BRAKE CIRCUIT

Shigemi Sakakibara, Imasato Susonoshi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 29, 1978, Ser. No. 891,388
Claims priority, application Japan, May 11, 1977, 52/58744[U]
Int. Cl.[2] B60Q *1/32*
U.S. Cl. 340—69 **5 Claims**

1. In a pilot mechanism interposed separately from brake warning lamp into a brake warning lamp circuit, a pilot lamp

machanism of a parking brake circuit, the improvement wherein a pilot lamp is provided at the rear end portion of a trunk lid and has warning lens means which extends both to left and right sides of the center portion of said trunk lid, said lens means being shaped as a body having visible portions

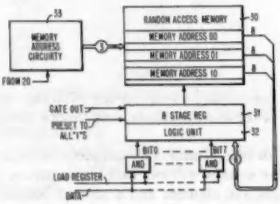


located outside and inside of said trunk lid with light from said pilot lamp passing through said lens means being visible to drivers of automobiles approaching from the rear from the portion of said lens means outside said lid when said lid is closed and from at least a part of said portion inside said lid when said lid is open.

4,185,269
ERROR CORRECTING SYSTEM FOR SERIAL BY BYTE DATA

Paul Hodges; Werner J. Schaeuble, and Paul L. Shaffer, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1978, Ser. No. 921,148
Int. Cl.² G06F *11/10, 11/12*
U.S. Cl. 340—146.1 AL **19 Claims**



1. A system for generating error correcting check bytes for a block of data having a relatively large number of data bytes each consisting of k bits, said system comprising:

(1) first and second check byte generating units, each of which includes means for generating at least one k bit check byte for at least two predefined interleaved subsets of data bytes in said data block wherein each said predefined subset includes no more than 2^k-1 data bytes;

(2) each said k bit check byte generated by said first unit representing a parity check byte for a different said predefined subset to provide for the subsequent generation of an error pattern syndrome byte for said subset from said parity check byte;

(3) each said k bit check byte generated by said second unit representing an error locator check byte for a different said predefined subset to provide for the subsequent generation of an error locator syndrome byte for said subset from said error locator check byte;

(4) each said k bit check byte generated by said units corresponding to one of 2^k unique k bit binary permutations;

(5) each bit of each said locator check byte representing the results of summing modulo 2 preselected bit positions of data bytes in a subset;

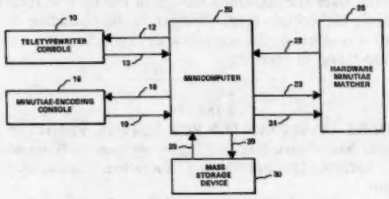
(6) said preselected bit positions being selected in accordance with a systematic approach which results in said error locator syndrome byte having a bit pattern which is indicative of the location in said subset of an error pattern corresponding to said error pattern syndrome byte.

(7) whereby an error in said data block within one byte or spanning two adjacent bytes each in a different subset are correctable.

4,185,270
FINGERPRINT IDENTIFICATION METHOD AND APPARATUS

Frederic P. Fischer II, and Phillip G. Pflueger, both of Williamsville, N.Y., assignors to Fingermatrix, Inc., North White Plains, N.Y.

Continuation of Ser. No. 706,728, Jul. 19, 1976, abandoned. This application Jun. 14, 1978, Ser. No. 915,475
Int. Cl.² G06K *9/00*
U.S. Cl. 340—146.3 E **5 Claims**



5. Apparatus for automatically searching a computer readable file of minutiae-encoded fingerprints under the overall control of an electronic computer to identify for further processing those sets of file fingerprints having the greatest degree of match with a set of search fingerprints comprising the steps of:

encoding means for entering data representing the locations and direction of the minutiae of each of the fingerprints in the set of search fingerprints, said data being independent of any registration between the search and file fingerprints,

comparison means for matching the locations and direction of each and every one of the encodable minutiae of corresponding ones of the fingerprints in a set of file fingerprints;

means to generate a set of registration parameters for each pair of search and file fingerprint minutiae matched;

means to identify any resulting clusters of said registration parameters; and

scoring means to provide a matching score based on the number of said clusters and the number of said registration parameters in said clusters.

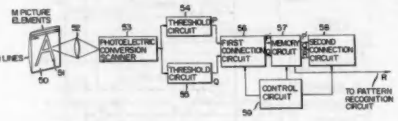
4,185,271
CHARACTER READING SYSTEM

Koji Izawa, Yokohama; Kouichi Komatsu, Ayase, and Mitsuyoshi Okamura, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 2, 1978, Ser. No. 947,574
Claims priority, application Japan, Oct. 3, 1977, 52-117876
Int. Cl.² G06K *9/12*
U.S. Cl. 340—146.3 AG **10 Claims**

1. A character reading system comprising means for scanning a character pattern on a recording medium to obtain an electric signal corresponding to the contrast of the character pattern; a first threshold circuit having a high threshold value to process an input pattern signal such that a noise component is not contained so as to obtain a kernel pattern P; a second

threshold circuit having a low threshold value to process said input pattern signal such that the character portion is positively included so as to obtain a reference pattern Q; a first masking means for applying a mask of a predetermined size to said kernel pattern P and said reference pattern Q obtained by said first and second threshold circuits respectively; means for performing a first connecting operation by a forward scanning by using said kernel pattern and said reference pattern in a mask obtained by said masking means; means for writing and storing a kernel pattern P' subjected to said connecting operation and said reference pattern Q; means for reading out in the opposite direction said kernel pattern P' and said reference pattern Q stored in said storing means; a second masking means for applying a mask having a predetermined size to said read out kernel pattern P' and said reference pattern Q; means for effecting a second connecting operation with a reverse scanning by using said kernel pattern P' and said reference pattern Q in a mask obtained by said second masking means; and means for finally connecting kernel patterns subjected to said second connecting operation to produce an output.



4,185,272

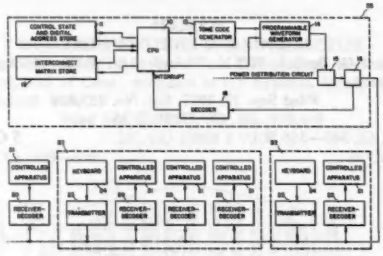
DISTRIBUTION CONTROL SYSTEM

George E. Feiker, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 809,939, Jun. 24, 1977, which is a continuation-in-part of Ser. No. 778,719, Mar. 17, 1977, abandoned. This application Apr. 13, 1979, Ser. No. 29,614

Int. Cl.[2] H04Q *9/00*

U.S. Cl. 340—168 R **2 Claims**



1. A method for performing a selected electrical function at a selected one of a plurality of remote locations from a central location comprising:

redundantly generating a predetermined number of digital words at said central location;

transmitting the generated words to each of said remote locations;

decoding each of said transmitted words at each of said remote locations;

detecting a predetermined address in each of said digital words at said selected remote location;

performing said selected function at said selected remote location when identical digital words having said predetermined address have appeared at said selected remote location a predetermined number of times out of the number of times said digital words have been redundantly generated at said central location; and

transmitting from said selected remote location to said central location a control signal intended to control a pre-programmed combination of loads responsive to said control signal.

4,185,273

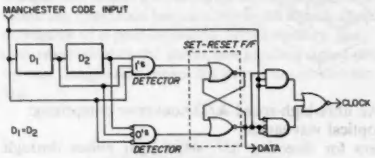
DATA RATE ADAPTIVE CONTROL DEVICE FOR MANCHESTER CODE DECODERS

Richard L. Gowan, Bonita, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 27, 1977, Ser. No. 819,638

Int. Cl.[2] H03K *13/24;* **G11B** *5/09*

U.S. Cl. 340—347 DD **4 Claims**



1. A data rate adaptive control device for Manchester code decoder comprising:

input means for receiving Manchester encoded data, said encoded data having a preamble which is a series of pulses, whose widths are equal and known for a particular data rate;

pulse width to digital converter means connected to said input means for providing an output signal indicative of the data rate in response to the detected pulse widths of said preamble, said pulse width to digital converter means including;

first and second flip-flop circuits, each of said flip-flop circuits having a j input, a k input, a clock input, a q output, and a q output;

a sample rate generator having first and second outputs, the first output of said sample rate generator being connected to the j input of said first and second flip-flop circuit, the second output of said sample rate generator being connected to the k input of said first flip-flop circuit;

the clock inputs of said first and second flip-flop circuits being connected to said input means for receiving said Manchester encoded data;

data present sensor circuit means having an input connected to said input means for receiving said Manchester encoded data and first and second outputs;

a data present flip-flop circuit means having a j input connected to the first output of said data present sensor circuit means, a reset input connected to the second output of said data present sensor circuit means, a clock input, a q output, and a q output;

an AND gate having a first input connected to said input means for receiving said Manchester encoded data, a second input connected to the q output of said second flip-flop circuit, a third input connected to the q output of said first flip-flop circuit, and a fourth input connected to the q output of said data present flip-flop circuit means, for providing a single pulse of the incoming data stream to be gated out during each cycle of said sample rate generator;

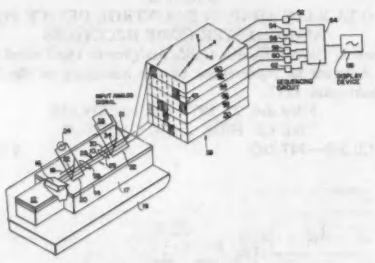
circuit means connected to said input means and to said pulse width to digital converter means for controlling the amount of delay of the received encoded data to provide optimum decoding of the encoded data.

4,185,274

HIGH-SPEED ELECTROOPTICAL A/D CONVERTER

Thomas G. Giallorenzi, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 12, 1978, Ser. No. 923,857
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 P **11 Claims**



1. An ultra-high-speed A/D converter comprising:
an optical waveguide,
means for directing fast, short light pulses through said waveguide,
an electrooptic prism on said waveguide through which said fast, short pulses are directed,
an analog input signal generator for applying analog signals to said electrooptic prism for deflecting said fast, short pulses of light in the plane of said waveguide,
a y-direction beam expander for spreading said fast, short pulses of light deflected by said electrooptic prism due to said analog signals,
a plurality of ribbon fibers stacked upon each other uniformly in the y-direction, said ribbon fibers having a coded input end formed by opaque and transparent areas which form an array of aligned coded columns with said columns extending in the y-direction side-by-side across the input end of said ribbon fibers, and
radiation detector means for detecting radiation passing through the transparent areas of each ribbon fiber upon which said light deflected from said waveguide is incident.

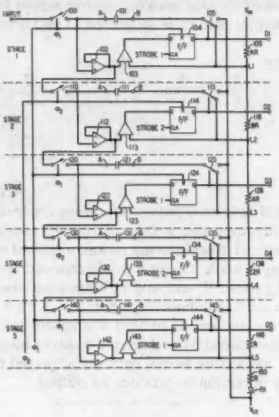
4,185,275

CAPACITIVE ANALOG TO DIGITAL CONVERTER

Robert L. Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 26, 1978, Ser. No. 928,163
Int. Cl.[2] H03K *13/09*
U.S. Cl. 340—347 AD **5 Claims**

1. An encoder system for converting a sample (V1) of an analog signal to an n bit digital (D1–D5) signal comprising:
n serially connected coding circuits, (STAGE 1, etc.) having associated therewith n reference potentials (L1, etc.) of decreasing magnitude which are applied to each respective coding circuit in descending order wherein each said coding circuit (STAGE 1) generates one bit (D1) of said n bit digital signal and comprises:
a capacitor (101) having two terminals (A, B); one of said reference potentials (L1) connected to a first (B) of said capacitor terminals:
CHARACTERIZED IN THAT said coder circuit (STAGE 1) includes:
means for coupling (100) the residue analog signal (V1) output by the previous coding circuit of said n serially connected coding circuits, to the second (A) of said capacitor terminals;
means for comparing (103) said residue analog signal (V1) to said reference potential (L1), said comparison representing said one bit (D1) of said n bit digital signal said one bit being a 1 when said residue analog signal (V1) exceeds said reference potential (L1), said one bit being a 0 when the converse is true;
reduction means (105) responsive to said means for comparing (103) for subtracting said reference potential (L1) from said first (B) capacitor terminal when said residue analog



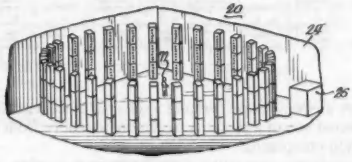
signal (V1) exceeds said reference potential (L1) thereby reducing said residue analog signal (V1) by the same amount; and
buffer means (102) responsive to said means for comparing (103) for outputting the resultant analog signal appearing on said second (A) of said capacitor terminals to the subsequent coding circuit (STAGE 2) of said n serially connected coding circuits.

4,185,276

SOUND AND LIGHT DISPLAY

Robert G. Benson, 720 N. Wabash Ave. #601, Chicago, Ill. 60611

Filed Sep. 29, 1977, Ser. No. 837,834
Int. Cl.[2] G08B *5/36*
U.S. Cl. 340—366 B **5 Claims**



1. A spatial energy system comprising:
a plurality of individual spaced-apart stations arranged in an effectively continuous, endless array forming a geometric shape defining a central position whereby said array effectively surrounds an observer positioned at said central position within said array, a plurality of said stations being disposed to permit the observer to pass therebetween to move inwardly and outwardly through said array, each of said stations having a vertically spaced-apart series of individually energizable lights; and
means including a generator for generating a series of electrical signals arranged in a plurality of channels of information and with there being variable signals in a channel of information to provide selective sequential energization

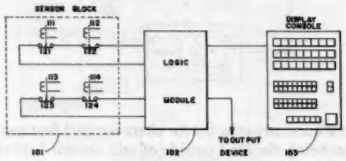
of said lights in patterns extending fully about said central position.

4,185,277

TRIP ALARM CIRCUIT

Philip P. Corso, 6607 S. Grande Dr., Boca Raton, Fla. 33433

Filed Feb. 16, 1978, Ser. No. 878,312
Int. Cl.[2] G08B *19/00*
U.S. Cl. 340—508 **2 Claims**



1. In a redundancy circuit for improvement of the performance of trip control apparatus, said trip control apparatus having an individual off-normal anticipatory circuit and an individual trip circuit, where said off-normal circuit is activated by an off-normal sensor which opens the off-normal circuit and said trip circuit is activated by a trip sensor which opens the trip circuit and where said off-normal sensor and said trip sensor are each arranged to act in a proper and necessary sequence in response to behavior of a sensed variable, and where said electrical circuits are electrically connected to a logic module which causes a trip output action if and only if both of said electrical sensors are in unanimous agreement,

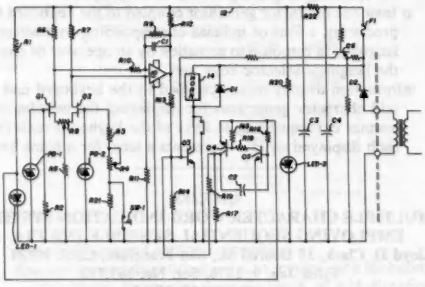
an improvement which consists of adding an additional and alike sensor to each of said off-normal and trip circuits, and connecting the additional alike electrical sensors in series configuration so that opening of the off-normal circuit will be actuated by actuation of at least one off-normal sensor and opening of the trip circuit will be actuated by actuation of at least one trip sensor.

4,185,278

OBSCURATION TYPE SMOKE DETECTOR

Willy Lintelmann, Old Saybrook, and Peter J. Frey, West Hartford, both of Conn., assignors to HF Systems, Incorporated, Wolcott, Conn.

Filed Sep. 22, 1977, Ser. No. 835,449
Int. Cl.[2] G08B *17/10*
U.S. Cl. 340—630 **15 Claims**



1. An obscuration type smoke detector comprising:

means defining a smoke chamber, said chamber defining means being provided with a plurality of spaced apertures for admitting smoke thereto;

a light source mounted to said chamber defining means so as to emit light into the smoke chamber;

first light detector means mounted to said chamber defining means, said first light detector means including a first light detector positioned to directly receive light emitted by said light source and transmitted across the smoke chamber whereby the intensity of the light incident upon said first light detector will be a function of the density of the smoke in the chamber, said first light detector generating an electrical signal commensurate with the intensity of the light received thereby;

reference signal generating means, said reference signal generating means including a second light detector, said reference signal generating means being mounted to said chamber defining means and being positioned such that light emitted into the smoke chamber by said light source will be incident on said second light detector whereby said second detector will generate an electrical output signal;

comparator means, said comparator means being connected to receive as inputs the signals generated by said first light detector and said reference signal generating means, said comparator means providing an alarm energization signal when the difference between the input signals thereto are indicative of a predetermined smoke density; and

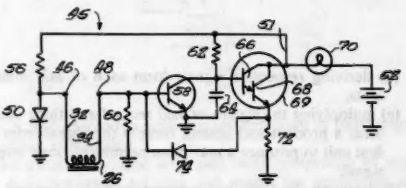
means responsive to the alarm energization signal provided by said comparator means for providing an audible warning.

4,185,279

MOTION DETECTOR

Wesley J. Bachman, Auburn, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Filed Jun. 15, 1977, Ser. No. 806,746
Int. Cl.[2] G01P *3/48*; G08B *21/00*
U.S. Cl. 340—671 **13 Claims**



1. A motion detector for detecting the speed of a moving body comprising: sensor means including magnet means for attachment to said body to move in unison therewith and pickup means including coil means mounted adjacent said body for producing an electrical signal in response to movement of said magnet means, which electrical signal varies systematically in accordance with said speed of said body, said detector further comprising signal means, circuit means connected between said coil means and said signal means for switching said signal means between a normal and a signaling condition in response to at least one predetermined value of said electrical signal, and adjusting means for selectively adjusting the sensor means for producing said predetermined value of said electrical signal in response to different speeds of said body.

4,185,280

METHOD OF AND APPARATUS FOR MONITORING OR CONTROLLING THE OPERATION OF A BOOM-TYPE CRANE OR THE LIKE

Wolfgang Wilhelm, Ratingen-Hösel, Fed. Rep. of Germany, assignor to Kruger & Co. KG, Essen-Werden, Fed. Rep. of Germany

Filed Dec. 28, 1977, Ser. No. 865,304
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1976, 2659755
Int. Cl.[2] B66C *15/06*; G08B *21/00*
U.S. Cl. 340—685 **12 Claims**

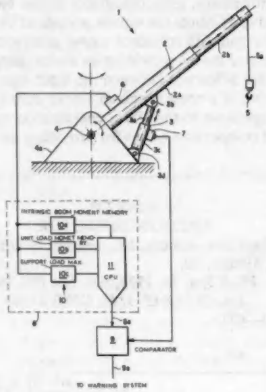
1. A method of monitoring the operation of a crane boom

which is tiltable in a vertical plane through an angle constituting a first parameter, swingable through an angle about a vertical axis constituting a second parameter and extendable to a degree constituting a third parameter, said method comprising the steps of:

(a) detecting and recording in a first memory unit the intrinsic load moment of said boom as a function of operating conditions of the boom including at least some of said parameters:

(b) detecting and recording in a second memory unit the moment of a unit load applied to said boom as a function of said conditions;

(c) recording in a third memory unit maximum permissible load values for the load applied to said boom per unit load;



(d) deriving respective signals form each of said memory units;

(e) multiplying the signals of said second and third units to form a product and adding thereto the signal from said first unit to produce a maximum permissible load setpoint signal;

(f) detecting the total load moment on said boom and producing an actual-value signal corresponding thereto under the instantaneous prevalent set of conditions;

(g) comparing said actual-value signal with said setpoint signal for the corresponding conditions; and

(h) generating a warning signal upon the actual-value signal approaching said setpoint signal under the given set of conditions.

4,185,281

ARRANGEMENT FOR SELECTING A DESIRED DATA DISPLAY

Derek M. Silverstone, Southend-on-Sea, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England

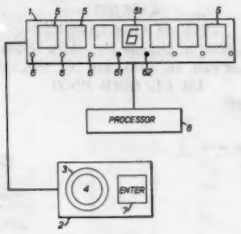
Filed Jun. 1, 1977, Ser. No. 802,509

Claims priority, application United Kingdom, Jul. 30, 1976, 31900/76

Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—706 **11 Claims**

1. A display arrangement which permits an operator of a vehicle such as an aircraft to select data for input to a data processor without requiring the operator to relinguish his normal monitoring and control of the vehicle, said display arrangement having a plurality of display elements disposed within the operator's normal field of view, and including first manually operable means comprising a first member manually movable to any one of a plurality of positions for selectively altering the data displayed in any one of the display elements, second manually operable means comprising a second member manually movable to any one of a plurality of positions for selecting the display element to be altered, and visual indicator means at each display element for indicating which display



element is currently selected for alteration said first and second members being disposed outside of said normal field of view.

4,185,282

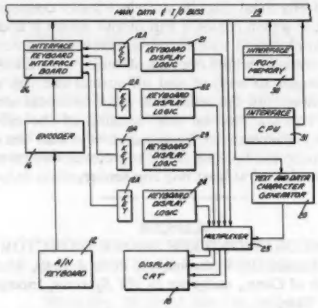
DISPLAYED KEYBOARD INDICIA

George G. Pick, Mendham, N.J., assignor to AM International, Inc., Los Angeles, Calif.

Filed Jun. 2, 1977, Ser. No. 802,896

Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—711 **4 Claims**



1. A keyboard indicia system comprising:

a keyboard having a plurality of blank keys and language selector keys, the language selector keys being disposed for selecting one of a plurality of languages;

at least one character generator coupled to the keyboard for producing a font of indicias corresponding to a selected language in response to actuation by an operator of one of the language selector keys; and

information display means coupled to the keyboard and to said character generators for displaying the indicias in a manner corresponding to keys of the keyboard such that each displayed indicia represents a label for a blank key.

4,185,283

MULTIPLE CHARACTER WORD INDICATION SYSTEM EMPLOYING SEQUENTIAL SENSIBLE INDICIA

Lloyd D. Clark, 15 Conrad St., San Francisco, Calif. 94131

Filed Jan. 9, 1978, Ser. No. 867,772

Int. Cl.[2] G04C *21/12*

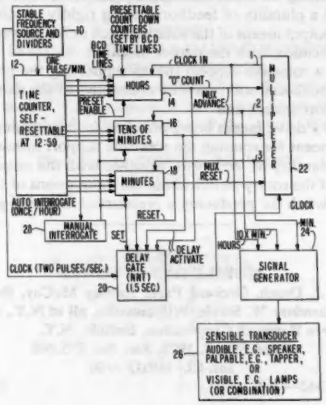
U.S. Cl. 340—802 **21 Claims**

1. A multiple-character-word indication system comprising:

(a) means for generating, at respectively different times, a plurality of electrical signals representative of a respective plurality of multiple-character words,

(b) means responsive to said electrical signals for indicating each multiple-character word by a sequence of groups of

character-representative indicia, each of said groups of indicia representing a respective character of said word and comprising a sequential series of indicia, each indicium being sensible by a human observer, each indicium being identical with the other indicia of its group and



having insufficient information content to unambiguously indicate the identity of every character representable by said group, the indicia of each group aggregatively having sufficient information content to indicate the identity of the character representable by said group.

4,185,284

GROUND STATION FOR THE DME DISTANCE MEASURING SYSTEM

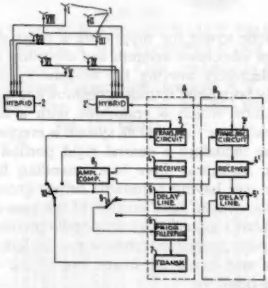
Horst Vogel, Korntal, and Herbert Kleiber, Ludwigsburg, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 22, 1978, Ser. No. 962,961

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753421

Int. Cl.² G01S 9/56

U.S. Cl. 343—6.8 R **8 Claims**



1. A DME ground station comprising:

first and second directional antenna groups each including a plurality of directional antennas, each of said directional antennas being oriented to produce a different angle of maximum radiation;

first means operatively connecting said antennas in first and second groups, said antennas being connected such that the radiation patterns of said antennas of said second group alternate in spatial relationship with respect to said antennas of said first group, said first means providing first and second ports connecting to said antennas of said first and second groups, respectively;

second means including first and second receivers connected to said first and second ports, respectively, for receiving DME interrogation pulses;

transmitting means responsive to said received interrogation pulses for generating a reply pulse group;

third means responsive to the outputs of said first and second receivers for comparing received signal outputs of said first and second receivers; and

for connecting said transmitting means to the one first antenna groups corresponding to said receiver having the larger of said received signal outputs, thereby to transmit said reply pulse group in the direction from which the larger interrogation signal amplitude was received.

4,185,285

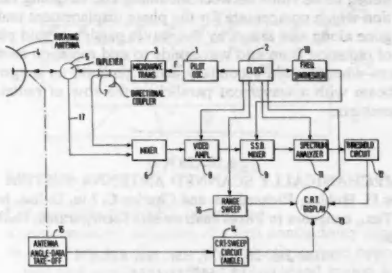
RADAR FOR THE DETECTION OF FIXED TARGETS IN CLUTTER

Henri J. Bosc, Paris, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 17, 1978, Ser. No. 897,768

Int. Cl.² G01S 9/02

U.S. Cl. 343—5 SA **5 Claims**



1. A high resolution radar for the detection of fixed targets in clutter, comprising:

first means associated with said radar comprising an angularly scannable antenna and means for generating and radiating a continuous-wave frequency-modulated transmitted signal, and means for receiving echo signals from targets and clutter illuminated by said transmitted signals;

second means associated with said means for receiving echo signals and for successively selecting resolution cells in range containing echo signals corresponding to both clutter and fixed targets;

third means responsive to said echo signals from said second means for successively producing a plurality of spectral line signals each of amplitude, each representing the magnitude of a corresponding frequency component within a given resolution cell, said spectral lines having greater amplitudes as they result from fixed targets than as resulting from clutter echoes;

and fourth means responding substantially only to said spectral lines of greater amplitude for producing an output identifying a fixed target mixed with clutter within a corresponding resolution cell.

4,185,286

NONDISPERSIVE ARRAY ANTENNA

Serge Drabowitch, and Bernard Daveau, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 9, 1978, Ser. No. 884,802

Claims priority, application France, Mar. 11, 1977, 7707331

Int. Cl.² H01Q 15/02

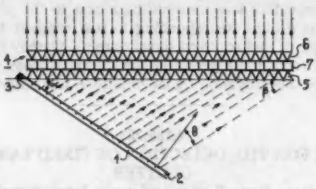
U.S. Cl. 343—754 **12 Claims**

1. A nondispersive array antenna comprising:

a primary radiator array in the form of at least one slotted

waveguide with an input end connected to a source of high-frequency waves to be sent out through the slots thereof in a plane of radiation at a frequency-dependent angle to a line perpendicular to said waveguide; and

a secondary radiator array including an acute angle with said waveguide in said plane of radiation, said secondary array being formed from a multiplicity of elemental radiation receivers and a like multiplicity of elemental radiation emitters disposed in at least one pair of parallel rows



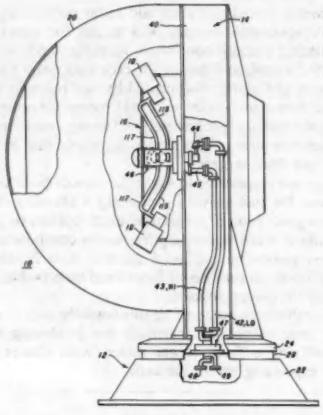
back-to-back, said radiation receivers facing said waveguide and being linked with respective radiation emitters proximal thereto by coupling means introducing predetermined phase shifts between incoming and outgoing radiation which compensate for the phase displacement undergone along said arrays by the waves passing in said plane of radiation from said waveguide to said radiation receivers whereby said secondary array generate an outgoing beam with a wavefront paralleling the row of radiation emitters.

4,185,287

MECHANICALLY SCANNED ANTENNA SYSTEM

James H. Hubing, Richardson, and Charles C. Liu, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 25, 1977, Ser. No. 818,474
Int. Cl.² H01Q 3/12
U.S. Cl. 343—761 **7 Claims**



1. A mechanically scanned antenna system comprising:

(a) an antenna support means; and

(b) an antenna scanning means being supported by the antenna support means; said antenna scanning means including:

(i) an RF power channel means for conducting RF energy to and from a radar receiver and transmitter,

(ii) a rotary switch having an input means and an output means, said input means being in RF energy conducting communication with the RF power channel means, and said output means being mounted on the input means with which it coacts for switching RF energy;

(iii) orientation means being operatively connected to the input means of the rotary switch for continuously orienting the input means to a preselected reference point,

(iv) a plurality of feedhorns being rigidly attached to the output means of the rotary switch in RF power communication with the output means,

(v) a rotatable support means supporting the plurality of feedhorns and rotatably connected to the antenna support means, and

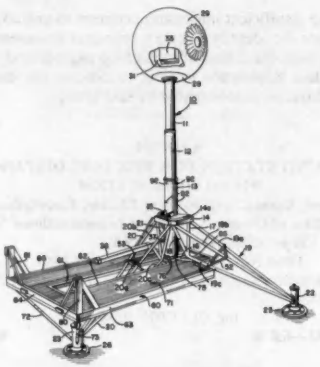
(vi) a drive means being attached to the antenna support means for rotating the rotatable support means, and the plurality of feedhorns, together with the output means of the rotary switch about the input means of the rotary switch for producing a preselected scanning pattern.

4,185,288

MOBILE RADAR TOWER

Thomas J. Dosch, Orchard Park; Rawley McCoy, Bronxville, and Theodore W. Steele, Williamsville, all of N.Y., assignors to Sierra Research Corporation, Buffalo, N.Y.

Filed Feb. 7, 1978, Ser. No. 875,848
Int. Cl.² H01Q 3/08
U.S. Cl. 343—765 **12 Claims**



1. A mobile tower for supporting a radar antenna system including an associated azimuth and elevation drive pedestal, and for selectively moving the antenna system between a substantially horizontal retracted position and an erected operational position which is restorable with a high degree of precision each time the antenna system is erected, comprising:

(a) a base including a central rigid portion and a tripod portion including three legs extending from the rigid portion and having adjustable height ground contacting pads, the central rigid portion of the base comprising an upper plate supporting a horizontally pivoting hinge and a lower plate spaced therebelow and including a saddle to receive and locate the lower end of the mast when in erected position;

(b) antenna system support means including a mast having an upper end supporting said antenna system, and the mast being fixed above its lower end to said hinge which includes a hinge plate connected to the mast and overlying the upper plate of the rigid base portion when the mast is erected, the rigid portion carrying the entire weight of the antenna system and support means, the hinge plate and the upper plate having multiple complementary key means and keyway means spaced about the mast which interengage when the mast is erected to orient the mast precisely with respect to the base with the lower end of the mast engaged in said saddle, the antenna system support means

being substantially cylindrical for all cross sections taken normal to the mast;

(c) means connected between the base and the mast for erecting and retracting the mast; and

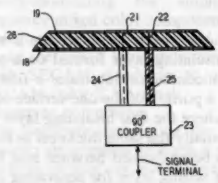
(d) the entire weight of the antenna system and the system support means being divided among said three tripod legs.

4,185,289

SPHERICAL ANTENNAS HAVING ISOTROPIC RADIATION PATTERNS

Charles M. DeSantis, Neptune, and Felix Schwering, Eatontown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 13, 1978, Ser. No. 941,878
Int. Cl.² H01Q *13/10*
U.S. Cl. 343—770 **14 Claims**



1. An antenna comprising:

a substantially spherical body having a center and an outer conductive surface;

two spaced conductive members located in said body providing a resonant cavity therebetween and including an annular slot communicating with said outer surface, said spaced conductive members being displaced from the center of said body for locating said annular slot in a polar region on said body; and

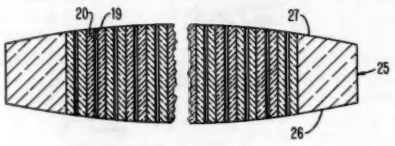
first and second probe means having respective conductors connected to one of saaid spaced conductive members for coupling between wave energy in said resonant cavity and signal energy, said probes being angularly displaced from each other by 90° about said center for coupling energy to said one spaced conductive member in a quadrature phase relation.

4,185,290

COMPENSATION FOR AERODYNAMIC DRAG ON INK STREAMS FROM A MULTI-NOZZLE INK ARRAY

Arthur R. Hoffman, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,300
Int. Cl.² G01D *15/18*
U.S. Cl. 346—75 **2 Claims**



1. An ink jet head including:

an array of nozzles;

said nozzles being arranged in a single plane;

each of said nozzles having a longitudinal passage of a constant cross sectional area extending therethrough, each of the cross sectional areas being the same;

said longitudinal passages for ink streams slowed by the ambient having a length less than the length of said longitudinal passages for ink streams not slowed by the ambient so that an ink stream flowing through each of said longitudinal passages of shorter length has an initial velocity greater than the ink streams flowing through said longitudinal passages for ink streams not slowed by the ambient to compensate for aerodynamic drag on the ink streams slowed by the ambient;

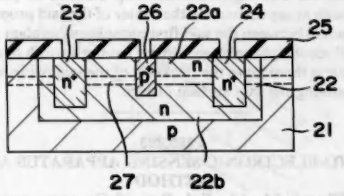
and one end of each of said longitudinal passages is on a first convex curve and the other end of each of said longitudinal passages is on a second convex curve.

4,185,291

JUNCTION-TYPE FIELD EFFECT TRANSISTOR AND METHOD OF MAKING THE SAME

Takashi Hirao, Neyagawa; Shigetoshi Takayanagi, Kyoto; Takeshi Onuma, Katano; Toshio Sugawa, Kadoma, and Kaoru Inoue, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 16, 1978, Ser. No. 916,818
Claims priority, application Japan, Jun. 30, 1977, 52-78753
Int. Cl.² H01L *29/80*
U.S. Cl. 357—22 **18 Claims**



1. A junction-type FET comprising

a semiconductor substrate of a first conductivity type,

an island region of a second conductivity type opposite to said first conductivity type which island region is selectively formed in said semiconductor substrate with its top surface contiguous to the top surface of said substrate,

a spaced source region and drain region of a high impurity concentration of said second conductivity type selectively formed in said island region,

a gate region of a high impurity concentration of said first conductivity type selectively formed between said source region and said drain region in said island region with its bottom shallower than the bottom of said island region,

a buried isolating region which is selected from the group consisting of an intrinsic layer and a low impurity concentration layer of said second conductivity type, which is formed at a specified depth shallower than the bottom of said gate region between said source region and said drain region in said island region, and which is disposed substantially parallel to said surface of said island region to divide said island region into a surface region and a channel region which is under the buried insulating region.

4,185,292

POTENTIAL TROUGHS FOR CHARGE TRANSFER DEVICES

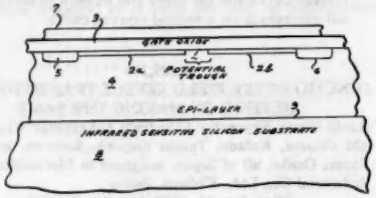
Richard D. Nelson, Santa Ana, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 840,334, Oct. 7, 1977, abandoned. This application Aug. 3, 1978, Ser. No. 930,788
Int. Cl.² H01L *27/78*
U.S. Cl. 357—24 **1 Claim**

1. The improvement in a surface charge transfer device having a propagation channel positioned between a conventional phosphorus diffusion left channel stop element and a conventional phosphorus diffusion right channel stop element,

the said propagation channel having a surface and a gate oxide layer positioned over the surface of the said propagation channel, the improvement comprising:

a. a first phosphorus ion implant having a density of approximately 1×10^{11} impurities per square centimeter in the said surface of the propagation channel extending from the said left channel stop element; and



b. a second phosphorus ion implant having a density of approximately 1×10^{11} impurities per square centimeter in the said surface of the propagation channel extending from the said right channel stop element to provide a trough at approximately the center of the said propagation channel between the said first phosphorus implant and the said second phosphorus implant having a width of approximately three times the thickness of the said oxide layer for confining the said surface charge.

4,185,293

OPTO-ELECTRONIC SENSING APPARATUS AND METHOD

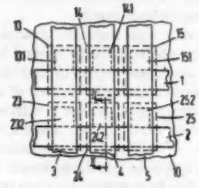
Jenöe Tihanyi, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 22, 1976, Ser. No. 725,537

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1975, 2543627

Int. Cl.² H01L *27/14*

U.S. Cl. 357—32 **16 Claims**



1. An opto-electronic sensor comprising:

(a) an insulating transparent substrate;

(b) an x-line comprising a doped first conductivity type semiconductor material strip and a doped second conductivity type material region on a surface of said substrate;

(c) a light-permeable insulating layer covering said x-line;

(d) a y-line comprising an electrically conductive material strip arranged over the insulating layer transversely to said x-line, a sensor element being formed at the crossover; and

(e) said doped second conductivity type semiconductor material region being contiguous said doped first conductivity type semiconductor material strip and beneath said y-line, said doped second conductivity type semiconductor material region having a light-sensitive material for producing a barrier-layer effect at a junction with said doped first conductivity type semiconductor material strip.

4,185,294

SEMICONDUCTOR DEVICE AND A METHOD FOR MANUFACTURING THE SAME

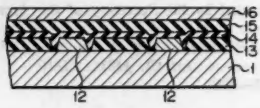
Yasusuke Sumitomo, Yokohama, and Yoshie Ohashi, Fujisawa, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 748,897, Dec. 9, 1976, Pat. No. 4,123,565. This application Apr. 17, 1978, Ser. No. 897,198

Claims priority, application Japan, Dec. 10, 1975, 50-146368

Int. Cl.² H01L *29/34, 23/30, 23/48*

U.S. Cl. 357—54 **6 Claims**



1. A semiconductor device comprising a semiconductor substrate; a first insulating layer formed on a portion of one surface of the semiconductor substrate; a first wiring layer formed on at least a portion of the one surface of the semiconductor substrate where the first insulating layer is not formed and having substantially the same thickness as the first insulating layer, grooves being formed between said first insulating layer and said first wiring layer for separating said layers; an insulating film formed in a substantially flat plane on the first insulating and first wiring layers for occupying the grooves between said first insulating and first wiring layers; an intermediate insulating layer formed on the insulating film; and a second wiring layer formed on the intermediate insulating layer.

4,185,295

METHOD OF MIXING SECAM COLOR-T.V. SIGNALS

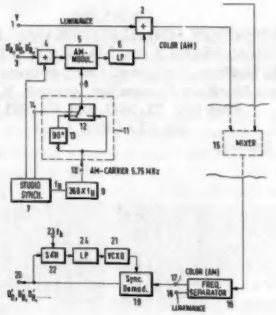
Heinz Hess, Weiterstadt, and Michael Hausdörfer, Darmstadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,658

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1977, 2746641

Int. Cl.² H04N *9/535*

U.S. Cl. 358—22 **26 Claims**



1. An improved method of mixing SECAM color-T.V. signals, the method being of the type comprising the steps of

(a) separating each one of the original SECAM color-T.V. signals to be mixed into its respective luminance component and its respective color component, with the color component being frequency-demodulated and having the form of two video-frequency color-difference signals time-division-multiplexed in respective alternate horizontal line intervals,

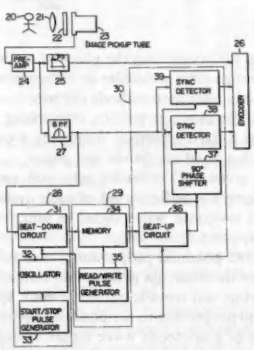
(b) amplitude-modulating the color component,
(c) and superimposing the amplitude-modulated color component onto the respective luminance component to form a frequency-multiplexed signal;
(d) transmitting the plural frequency-multiplexed signals, each corresponding to a respective one of the original SECAM color-T.V. signals to be mixed, to a mixer and producing a mixed frequency-multiplexed signal;
(e) frequency-separating the mixed frequency-multiplexed signal to form a mixed luminance component and a mixed color component, the mixed color component being amplitude-modulated;
(f) amplitude-demodulating the amplitude-modulated mixed color component, to obtain an amplitude-demodulated video-frequency mixed color component comprised of two video-frequency mixed color-difference signals time-division-multiplexed in respective alternate horizontal line intervals; and
(g) frequency-modulating the amplitude-demodulated video-frequency mixed color component and superimposing the resultant frequency-modulated mixed color component onto the mixed luminance component in accordance with SECAM standards, to obtain the desired mixed SECAM color-T.V. signal;
the improvement comprising
in step (b) amplitude-modulating the color component with carrier suppression to form a suppressed-carrier amplitude-modulated color component,
in step (b), during horizontal blanking intervals, superimposing on the amplitude-modulated color component reference oscillations of the carrier signal used for the amplitude-modulation,
in step (f), performing the amplitude-demodulation of the suppressed-carrier amplitude-modulated mixed color component using a synchronous demodulator, and furnishing to the synchronous demodulator for the demodulation a carrier signal dependent upon the reference oscillations in the horizontal blanking intervals of the amplitude-demodulated mixed color component.

4,185,296

COLOR TELEVISION CAMERA

Shoji Nishikawa, Takaishi, and Ryuhei Nakabe, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 19, 1977, Ser. No. 826,242
Claims priority, application Japan, Aug. 24, 1976, 51/101330; Aug. 24, 1976, 51/101331; Nov. 20, 1976, 51/139789; Dec. 22, 1976, 51/155435
Int. Cl.[2] H04N *9/07*
U.S. Cl. 358—45 **29 Claims**



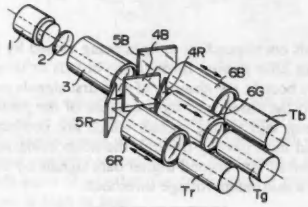
1. A color television camera comprising:
means for converting an index signal synchronized with a modulated color signal, said modulated color signal being space modulated by a stripe color filter, into a low frequency signal;
means for storing the converted low-frequency signal;
means for generating a signal for correcting beam scan distortion;
means for controlling a phase of said low frequency converted index signal in accordance with said correction signal; and
means for processing in a circuit, the signal read out of said storing means and said modulated color signal to produce a color signal.

4,185,297

COLOR SEPARATION OPTICAL SYSTEM FOR COLOR TELEVISION CAMERA

Toshiro Yamauchi, Omiya; Takemi Saito, Kawagoe, and Shigehiro Kanayama, Omiya, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Mar. 3, 1978, Ser. No. 883,195
Claims priority, application Japan, Mar. 11, 1977, 52-26732
Int. Cl.[2] H04N *9/08*; G03B *3/00, 13/02*
U.S. Cl. 358—55 **9 Claims**



1. A color separation optical system for a color television camera of the relay lens type provided between a taking lens and three image pick-up tubes in the camera, comprising a first relay lens, a color separating optical means located behind the first relay lens for dividing an optical path from the first relay lens into three parallel optical paths, and three second relay lenses located in the three optical paths, respectively, wherein the improvement comprises focus adjusting means provided in at least two of said three second relay lenses for moving the second relay lenses in the direction of the optical axes thereof with respect to the image pick-up tubes located therebehind.

4,185,298

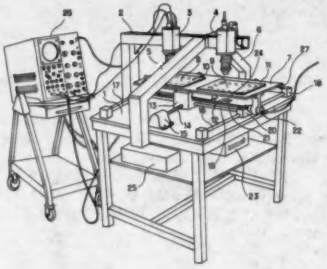
PROCESS AND APPARATUS FOR THE AUTOMATIC INSPECTION OF PATTERNS

Gilles Billet, Virieu le Grand, and Jean Blottiau, Velizy, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel S.A., Paris, France

Filed Aug. 12, 1976, Ser. No. 713,964
Claims priority, application France, Aug. 13, 1975, 75 25234
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—106 **10 Claims**

1. A process for the automatic inspection of patterns on printed circuits boards comprising positioning two cameras (3,4) each facing a corresponding printed circuit board (10,11), illuminating the printed circuits on said boards, one of the boards carrying a standard reference printed circuit, and the other a printed circuit to be inspected, providing said cameras with a strip of photodiodes lying in a plane parallel to said printed circuit boards, and effecting a comparison between said standard reference printed circuit and the printed circuit to be inspected by simultaneously:
a. scanning corresponding areas of the printed circuits of each board by synchronized relative translation of either the cameras or the boards, said relative translation and said scanning of the strips of photodiodes being coordinated to cause each board to be entirely explored,

b. effecting synchronized cyclic scanning of the photodiodes of said strips of photodiodes, and converting the analog signals delivered by the photodiodes into digital data and by comparing said digital data by a logic circuit providing a fault signal if comparison shows a difference between the boards, said analog signals derived from the cameras being converted into first digital data signals by comparison with a minimum voltage threshold, said first data



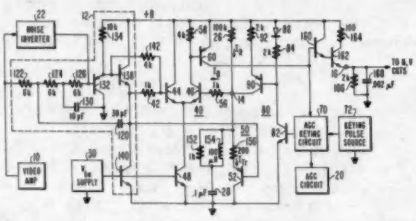
signals corresponding to light being sensed by the photodiodes after passing through the boards or through holes in the boards, the absence of said first signals corresponding to the absence of light because of the printed circuit pattern, said analog signals which are produced by the sensed light passing through the holes being additionally converted into second digital data signals by comparison with a maximum voltage threshold.

4,185,299

SYNCHRONIZATION SIGNAL SEPARATOR CIRCUIT

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,821
Int. Cl.[2] H04N *5/08*
U.S. Cl. 358—153 **20 Claims**



6. A synchronizing signal separator circuit for deriving a synchronizing signal from a composite video signal comprising:

peak detecting means for generating a reference voltage related to the synchronizing signal components of said composite video signal;

differential amplifier means responsive to said composite video signal and said reference voltage for generating a separated synchronizing signal when the synchronizing signal components of said composite video signal exceed said reference voltage level; and

means responsive to the output of said differential amplifier for varying said reference voltage level when the synchronizing signal components of said composite video signal do not exceed said reference voltage level.

13. A synchronizing signal separator circuit for deriving a synchronizing signal from a composite video signal comprising:

a source of input signals, said input signals comprising composite video signals having a given bandwidth and containing synchronizing signal components;

peak detecting means coupled to said source of input signals for generating a reference voltage related to the peaks of the synchronizing signal components of said composite video signals, said peak detecting means exhibiting a response characteristic having a bandwidth substantially less than that of said composite video signals; and

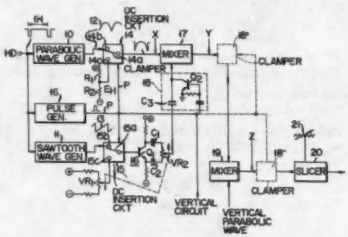
differential amplifier means responsive to said composite video signals and said reference voltage for generating a separated synchronizing signal when the synchronizing signal components of said composite video signals exceed said reference voltage level.

4,185,300

PHASE CONTROL OF PARABOLIC WAVE IN SPECIAL EFFECTS SYSTEM

Kazuhiko Miyake, and Bunkichi Yamada, both of Kawasaki, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 1, 1978, Ser. No. 874,226
Claims priority, application Japan, Feb. 4, 1977, 52-11484
Int. Cl.[2] H04N *5/22*
U.S. Cl. 358—183 **27 Claims**



1. A method for controlling the phase of a continuous parabolic wave used to form a circular or elliptic montage pattern on the screen of a television cathode ray tube in order to move the position of the montage pattern, comprising the steps of:

producing at a fixed repetition frequency a parabolic wave signal with a fixed amplitude and phase;

inserting a given DC potential into said parabolic wave signal during a specific period of each cycle;

producing a sawtooth wave signal at said fixed repetition frequency;

inserting a DC potential proportional to a position control quantity of the montage pattern into said sawtooth wave signal during said specific period of each cycle;

controlling in proportion to the position control quantity the amplitude of a sawtooth wave signal having the DC potential proportional to the position control quantity during said specific period of each cycle; and

mixing the controlled sawtooth wave signal with said parabolic wave signal.

4,185,301

SCANNING VELOCITY MODULATION SYSTEM

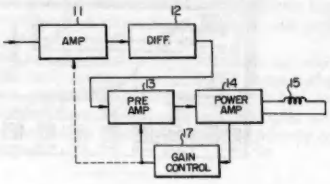
Katsumi Mitsuda, Hirakata; Katsuhiko Yamamoto, Neyagawa; Katsumi Adachi, Moriguchi; Susumu Tsujihara, Neyagawa; Taiichi Saeki, Katano, and Minoru Takeda, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 30, 1978, Ser. No. 910,872

Claims priority, application Japan, Jun. 1, 1977, 52-65008; Jun. 1, 1977, 52-65009; Jun. 8, 1977, 52-75066[U]

Int. Cl.² H04N *5/68*

U.S. Cl. 358—242 **7 Claims**



1. A scanning velocity modulation system comprising a scanning velocity modulating electron beam deflector, a power amplifier for driving said deflector, a preamplifier inserted in a compensation signal path at a stage preceding to said power amplifier, and a gain control circuit for detecting a mean current dissipated in said power amplifier to control a gain of said preamplifier in response to the detected signal.

4,185,302

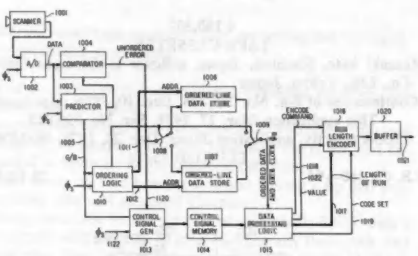
RUN LENGTH ENCODING OF FACSIMILE SIGNALS

Frank W. Mounts, Colts Neck; Arun N. Netravali, Matawan, and Kenneth A. Walsh, Atlantic Highlands, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 20, 1978, Ser. No. 926,330

Int. Cl.² H04N *1/00*

U.S. Cl. 358—261 **31 Claims**



1. Apparatus for encoding a facsimile signal each sample of which represents the intensity value of a corresponding element of a picture, including

means for forming a prediction of the intensity value of each of said samples;

means for forming an error signal which comprises a plurality of error values, each indicating whether a respective one of said predicted intensity values differs from its corresponding true intensity value; and

means for sorting error values corresponding to N picture elements within a predetermined reordering interval into first and second groups in accordance with the confidence in each of said predicted intensity values;

characterized by:

means for encoding run lengths in said first group with a first code set and run lengths in said second group with a second code set.

4,185,303

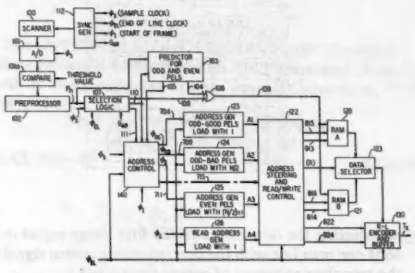
RUN LENGTH ENCODING OF FACSIMILE PICTURES

Frank W. Mounts, Colts Neck; Arun N. Netravali, Matawan, and Kenneth A. Walsh, Atlantic Highlands, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 30, 1978, Ser. No. 965,181

Int. Cl.² H04N *1/00*

U.S. Cl. 358—261 **21 Claims**



1. Apparatus for encoding a series of bits each representing the intensity of an element of a picture, comprising:

means (**103**) for predicting the intensity value of each pel based on previous intensity values and for generating a reference signal indicative of whether the confidence in each of said predictions is high or low;

means (**106**) for comparing the intensity value of each pel with said predicted value to generate a series of error bits;

means (**120, 121**) for storing error bits for a reordering interval which includes N elements of said picture; and

means (**130**) for run length encoding said stored error bits in a predefined order,

characterized by

means (**102**) for preprocessing said series of bits to eliminate runs of length one;

logic means (**107**) responsive to said preprocessing means for generating at least a first control signal in the presence of a first set of said bits; and

control means (**140**) jointly responsive to said reference signal and to the output of said logic means for storing said error bits in said storing means in an order different from the order in which said error bits are generated.

4,185,304

ELECTRONIC HALFTONE SCREENING

Thomas M. Holladay, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 7, 1977, Ser. No. 813,559

Int. Cl.² H04N *1/22*

U.S. Cl. 358—298 **18 Claims**

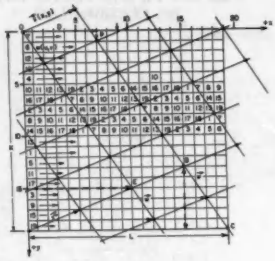
1. In an electronic halftone image screening method of the type having an original image to be electronically screened represented by electronic image signals related to the image densities of sample areas of the original image ordered in multiple scan lines and having an electronic halftone screen of a predetermined angle represented by electronic screen signals related to the image density values of partial dots within cells of the screen which correspond to sample areas in the scan lines, the improvement comprising

selecting the number of screen signals, NLEV, to be equal to the number of partial dots within a cell of the electronic screen,

ordering the screen signals in a sequence determined by the angle of the cells in the screen,

selecting the number of image signals in a scan line to equal a whole number integer multiple times NLEV plus a number equal to an extension parameter E, wherein E is a constant value determinable from the angle of the cells in the screen,

recycling the ordered sequence of screen signals during a scan line by scan line sequencing of the image signals,



synchronizing the occurrence of the first image signal in at least one scan line with the corresponding screen signal in the recycling sequence of screen signals and

combining the synchronized image and screen signals to generate screened image signals related to the image densities of sample areas in scan lines of an electronically screened reproduction of the original image.

4,185,305

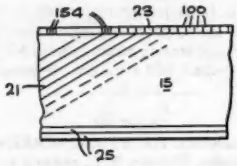
VIDEO INFORMATION RECORDING AND REPRODUCING METHODS AND APPARATUS

Ludwig A. Perret, La Canada, and James A. Miller, Chatsworth, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Continuation-in-part of Ser. No. 448,117, Mar. 4, 1974, abandoned. This application Jul. 18, 1975, Ser. No. 597,051

Int. Cl.[2] H04N *5/78*

U.S. Cl. 360—33 **50 Claims**



7. In a method of recording video signals including video and synchronization information for subsequent reproduction with the aid of second control information for controlling the reproduction of said video signals, the improvement comprising in combination the steps of:

providing first control information distinct from said video and synchronization information and incapable of controlling the reproduction of said video signals but being convertible to said second control information;

recording said video signals and first control information distinct from said video and synchronization information; and

recording with said first control information a supplemental signal for concealing the nature of said first control information.

4,185,306

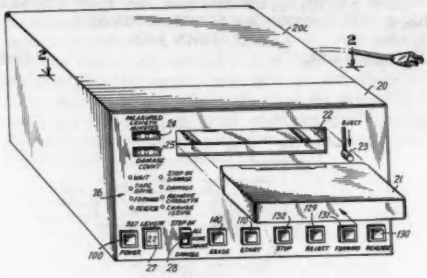
MAGNETIC TAPE PROCESSOR HAVING CLEANING AND EVALUATING MEANS

Don J. Dudley, 326 Woodland Dr., Brightwaters, N.Y. 11718

Filed Apr. 3, 1978, Ser. No. 892,734

Int. Cl.[2] G11B *15/06, 23/04, 23/50*

U.S. Cl. 360—71 **19 Claims**



18. Apparatus for processing a magnetic tape having a layer of magnetizable material on one surface and stored on two reels in a cassette, said cassette having an access opening for exposing a portion of the tape, said apparatus comprising a tape wiping means, finger means extending into the opening of the cassette for withdrawing the tape therefrom to constrain the tape to a path opposite said tape wiping means, said finger means moving from a first position to engage the magnetic tape in the opening of the cassette to a second position which establishes the path of travel of the magnetic tape before said reels are driven and from the second position to the first position in response to a processing-terminated signal; means for driving said reels whereby the magnetic tape moves past said tape wiping means; means for generating a processing-terminated signal for stopping said drive means; and means operative after the generation of the processing terminated signal for further energizing said driving means to reel into the cassette the remaining withdrawn tape.

4,185,307

TAPE CASSETTE

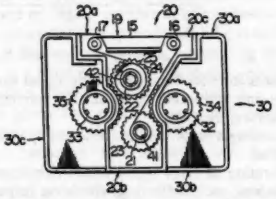
Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 749,408, Dec. 10, 1976, abandoned. This application Mar. 27, 1978, Ser. No. 890,815

Claims priority, application Japan, Dec. 23, 1975, 50/153025

Int. Cl.[2] G11B *15/26*

U.S. Cl. 360—94 **11 Claims**



1. For use in a cassette recorder designed to receive a tape cassette having a predetermined configuration and size, a miniature tape cassette and adaptor comprising:

an adaptor having a first and second tape hub transmission members, each adapted to engage a different drive shaft of said recorder;

a miniature tape cassette comprising a housing, first and

second tape winding hubs mounted on said housing, an opening formed along one edge of said housing, a magnetic tape extending between said tape winding hubs and guide means for guiding said magnetic tape along said opening;

said adaptor having a recess therein for receiving said miniature cassette when said miniature cassette is placed in operational engagement with said adaptor;

means for causing said first and second tape winding hubs to rotate in response to rotation of said first and second tape hub tranmission members when said miniature tape cassette is placed in said recess;

the configuration and size of the combined miniature cassette and adaptor when said miniature cassette has been placed within said recess being equal to said predetermined configuration and size; and

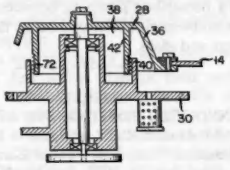
the relative location of said miniature cassette and said adaptor when said cassette is placed in said recess being such that said opening in said miniature cassette lies along an outer edge of the combined cassette and adaptor whereby a magnetic pick-up of said recorder may directly contact said magnetic tape.

4,185,308

ENCLOSED-TYPE MAGNETIC DISC RECORDING AND/OR REPRODUCING APPARATUS

Masahiko Fujioka, Hamura, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 21, 1977, Ser. No. 835,060
Claims priority, application Japan, Sep. 24, 1976, 51-114436
Int. Cl.[2] G11B *17/00*
U.S. Cl. 360—97 **4 Claims**



1. An enclosed-type magnetic disc recording and/or reproducing apparatus comprising:

a base,

a disc cover to define an enclosed chamber between said cover and said base,

a bearing unit having two ends, one end protruding into said enclosed chamber from said base and the other end exposed to open air at atmospheric pressure,

a shaft borne by said bearing unit and having a tip end protruding into said enclosed chamber,

a flange attached to the tip end of said shaft, fitted with a magnetic disc so as to be rotated integrally therewith, and defining along with said base a separate pressure chamber within said enclosed chamber to surround said bearing unit and isolate said bearing unit from said enclosed chamber,

a spiral groove for raising the air pressure within said pressure chamber to a level above that in the enclosed chamber, and

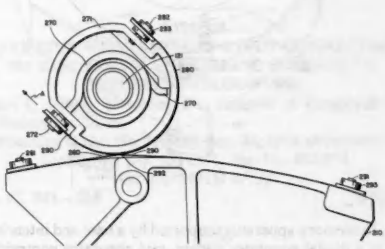
means for rotating said shaft, said flange attached to the tip end of said shaft, and said magnetic disc, said pressure chamber within the enclosed chamber having a first cylindrical projecting member projecting toward the flange from the base so as to surround the bearing member and a second cylindrical projecting member projecting toward the base from the flange so as to surround the bearing member and rotate relatively to the first projecting member with a suitable length of the free end portions of both projecting members overlapping each other with a space left between said portions, both cylindrical projecting members being concentric with the shaft and having inner diameters larger than the diameter of the bearing unit, whereby said pressure chamber is formed between the projecting members, the base and the bearing unit; and said spiral groove being formed on the overlapping portion of the second projecting member facing the first projecting member to force air through the space left between the overlapping portions of the first and second cylindrical projecting members by introducing low-pressure air which surrounds said pressure chamber into the pressure chamber by relative rotation between the projecting members as produced by rotation of the shaft.

4,185,309

MAGNETIC HEAD ADJUSTMENT MECHANISM

Michael Feldstein, Sudbury, and Harold Thackaberry, Franklin, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 25, 1978, Ser. No. 899,941
Int. Cl.[2] G11B *5/012, 5/48*
U.S. Cl. 360—97 **4 Claims**



1. Memory apparatus supported by a base for use in a digital computer system comprising in synergistic combination:

at least one spinable rigid magnetic disc for recording digital information;

magnetic head means for reading said information from and writing ssid information into said disc;

positioning means for accurately positioning said magnetic head means parallel and adjacent to the plane of said disc; said positioning means including

supporting means movably mounted on said base and movable in directions parallel to and perpendicular to the plane of said disc for supporting said magnetic head means, and

shim means for displacing and supporting means in the direction perpendicular to the plane of said disc to accurately adjust the adjacent relationship between said magnetic head mean and said disc;

motor means including a spinable shaft for driving said disc about its spin axis; a transducer system for measuring angular displacement of said spinable disc from a reference fixed to said base, said transducer system commprising:

a transducer-related disc having means for communicating with said transducer mounted on said transducer-related disc, said transducer-related disc being mounted on said shaft and spinable therewith;

a transducer having transmitting and receiving devices, and oriented to permit passage of said transducer-related disc between said devices to alternately permit and prevent communication between said devices; and

an upright member for supporting said transducer, said upright member including a base lip for connection to said base, said base and said base lip having keying means for constraining the mounting of said transducer system to said base to a predetermined orientation, whereby said

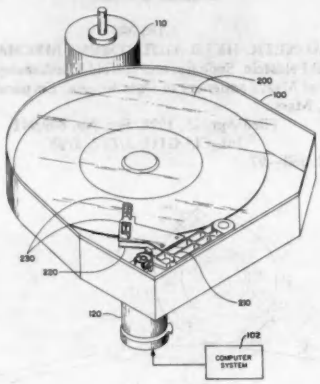
transducer-related disc is constrained to pass between said optical devices.

4,185,310

COOLING APPARATUS FOR SPINNING MAGNETIC DISC MEMORY APPARATUS

Robert Kaseta, Stow; Lenn Daugherty, Northboro; Sigmund Hinlein, Sudbury, and David Chastain, Boston, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 25, 1978, Ser. No. 899,942
Int. Cl.² G11B 5/54, 23/02, 21/08
U.S. Cl. 360—97 **4 Claims**



1. In memory apparatus supported by a base and intended for use in a digital computer system, said apparatus comprising:

at least one spinable and rigid magnetic disc for recording digital information;

magnetic head means for reading said information from and writing said information into said disc;

positioning means for accurately positioning said magnetic head means parallel and adjacent to the plane of said disc, said positioning means comprising supporting means movably mounted on said base for supporting said magnetic head means, stepper motor means including a stepper motor mounted on said base responsive to electrical signals from said computer system for providing mechanical step motion, band means for coupling said step motion to said movably mounted supporting means, whereby said head means is stepped along said disc surface;

sealed housing means for enclosing at least said at least one spinable and rigid magnetic disc and said magnetic head means;

rotational motor means including a spinable shaft sealably mounted through said housing means for spinning said magnetic disc; and,

cooling means comprising flow means coupled to said shaft external to said sealed housing means for causing flow of ambient air to cool selected portions of said apparatus external to said sealed housing means.

4,185,311

PARTITION OF HIGH PERFORMANCE FLOPPY PACK AND ASSOCIATED MEANS

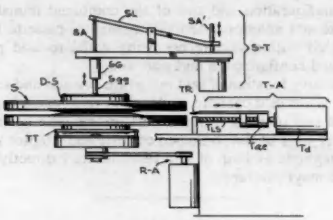
Ko Ko Gyi, and Herbert U. Ragle, both of Thousand Oaks, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 779,573, Mar. 21, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 931,057
Int. Cl.² G11B 5/82, 5/54, 25/04
U.S. Cl. 360—99 **7 Claims**

1. A method of providing for the controlled pneumatic separation of a stack of thin flexible sheet-like record disks, aligned along a prescribed stack radius, the method being adapted to provide for the selective pneumatic partitioning of this stack, this method comprising the steps of:

stacking said flexible disks together with intermediate radially-apertured, rigid separator rings so as to form a disk pack with the inner periphery of the disks retained together to define a center-bore, and so as to permit the pack to be parted between any selected pair of adjacent disks, the pack being adapted to engage high speed rotation means;

providing partition-jet body in this bore;



this body comprising axially-translatable pneumatic partition-jet means arranged to project a jet of partitioning pressurized gas radially-out between selected records;

providing for delivery of said pressurized air to jet means;

providing related actuate means adapted to selectively translate said body along this bore, whereby to dispose said jet for a selected partition; and

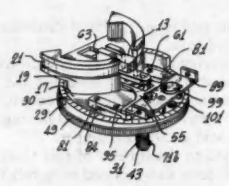
partitioning said stack by rotating said stack sufficient to induce a prescribed pumping between all disks so as to draw-in ambient air about said body, then out through all said rings and disks.

4,185,312

TRANSDUCER POSITIONING APPARATUS

James Bjordahl, Arcadia, Calif., assignor to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jan. 23, 1978, Ser. No. 871,238
Int. Cl.² G11B 5/55, 21/10, 21/12
U.S. Cl. 360—106 **22 Claims**



1. Apparatus for positioning a transducer head in a prescribed relationship relative to a selected one of a plurality of tracks on a recording medium, said apparatus comprising:

a frame;

cam means mounted for movement on said frame;

a lever pivotally mounted on said frame and having a remote end engageable with said cam means and movable in accordance with movement thereof; and

support means operatively connected to said lever, for supporting said transducer head, wherein movement of the remote end of said lever effects a corresponding movement, of lesser magnitude, of said transducer head, to move the head along the surface of the recording medium and thereby position the head in a prescribed position relative to the selected track on the recording medium

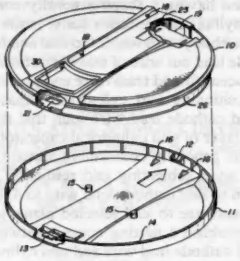
with a precision greater than that with which said cam is formed.

4,185,313

DISC MEMORY MODULE DUST SHIELD

Paul N. Green, and James A. Duff, both of Omaha, Nebr., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Sep. 25, 1978, Ser. No. 945,722
Int. Cl.[2] G11B *23/04, 17/26*
U.S. Cl. 360—133 **9 Claims**



1. A disc memory module for mounting in a drive unit, of the type including a housing loosely enclosing the disc and having at least one aperture permitting access to the disc within by the drive unit, and having a dust shield mating surface and a detachable dust shield mating therewith, in combination sealing each aperture from ambient air, said dust shield to be detached and reattached to the housing respectively just before and just after the time the module occupies the drive unit, wherein the improvement comprises

(a) a projection and lip, one of each carried by each of the housing and dust shield adjacent their peripheries, and arranged to lockingly engage when the dust shield is mated with the module housing; and

(b) a latch and striker, one of each carried by each of the housing and dust shield adjacent their peripheries and opposite the projection and lip arrangement, and arranged to lockingly engage each other when the edge of the dust shield adjacent is pushed into the mated position with the module housing, and further including a release mechanism allowing the latch and striker to disengage each other.

4,185,314

RECORD DISK CARTRIDGE HAVING EJECT SPRING WITHIN CARTRIDGE

Michael R. Hatchett, and Leonard J. Rigbey, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 846,228, Dec. 26, 1978, Pat. No. 4,131,199. This application Nov. 2, 1978, Ser. No. 956,811
Int. Cl.[2] G11B *23/04, 5/016;* B65D *85/02*
U.S. Cl. 360—133 **8 Claims**

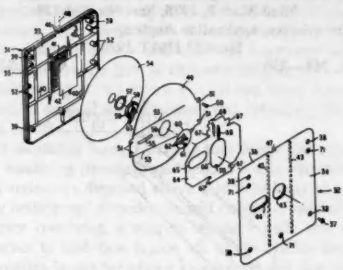
1. A record medium cartridge movably containing a record medium and including an aperture facing said movably contained record medium for enabling transducing access to said movably contained record medium via said aperture, including in combination:

a shutter member movably mounted interior to said record medium cartridge and adapted for reciprocal motions for covering and uncovering said aperture;

spring means interposed between said shutter member and said record medium cartridge for yieldably urging said shutter member for closing said aperture;

said record medium cartridge having a second aperture; and

an operating surface on said shutter member aligned with said second aperture whereby a pin entering said second aperture moves the shutter member against the yieldable urging of said spring means for opening the cartridge and



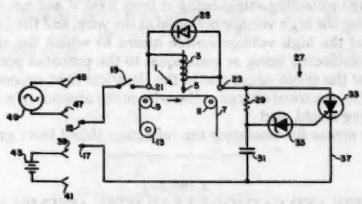
cocking the spring means for ejecting the cartridge by bearing against said entered pin.

4,185,315

APPARATUS WITH A SINGLE INPUT CONNECTABLE TO ELECTRICAL ENERGIZING SOURCES OF DIFFERENT CHARACTER

Robert L. Miller, Horsham, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 725,888, Sep. 23, 1976, abandoned. This application Sep. 13, 1977, Ser. No. 832,874
Int. Cl.[2] H01H *47/32*
U.S. Cl. 361—205 **6 Claims**



1. Apparatus for automatically delivering relatively low voltage DC energy to a portion requiring such energy when said apparatus is connected to either of two energy sources, one of said sources providing relatively low voltage DC energy and the other of said sources providing relatively high voltage AC energy, said apparatus comprising

a portion requiring for its energization relatively low voltage DC energy,

a pair of input terminals arranged for selective connection to either of said two sources,

a semiconductor switch device having a pair of principal electrodes,

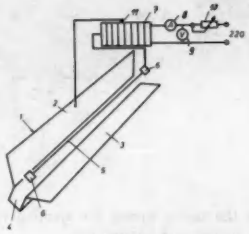
means connecting said portion and said principal electrodes between said terminals, and

circuit means connected to said switch device for turning on said switch device, when said terminals are connected to said one source, to apply to said portion its required relatively low DC voltage as derived from the energy of said one source, and for turning on said switch device for only a part of each cycle of said AC energy when said terminals are connected to said other source, the duration of said parts being such that effectively the same voltage is applied across said portion when said terminals are connected to said other source as is applied across said portion when said terminals are connected to said one source.

4,185,316
APPARATUS FOR THE GENERATION OF IONS

Carl M. Fleck, Schelleingasse 14/2, A 1040 Vienna, Austria

Filed Mar. 9, 1978, Ser. No. 884,728
Claims priority, application Austria,
Int. Cl.[2] H01T *19/00*
U.S. Cl. 361—230 14 Claims

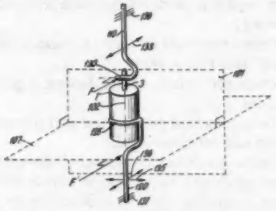


1. An apparatus for generating ions, comprising
(a) high voltage source means,
(b) a wire of electrically conductive material connected to the high voltage source means for applying a high voltage potential to the wire whereby ions are emitted therefrom,
(c) a metallic reflecting shield arranged at a distance from the wire and having two edges wherebetween the shield partially surrounds the wire, the shield edges defining therebetween a discharge region for the emitted ions, and the reflecting shield being connected to the high voltage source means for applying to the shield a high voltage potential of the same polarity as that of the high voltage potential applied to the wire, the high voltage potential at the reflecting shield being at least 3000 V and not exceeding the high voltage potential at the wire, and the potential of the high voltage source means to which the shield is connected being at least equal to the potential prevailing at the shield edges due to the electrical field generated by the electrical charge at the wire in the absence of a reflecting shield, and
(d) means for insulating the reflecting shield from ground.

4,185,317
ANODE AND CATHODE LEAD WIRE ASSEMBLY FOR SOLID ELECTROLYTIC CAPACITORS

Richard A. Lambrecht, Greenville, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,220
Int. Cl.[2] H01G *9/00*; B01J *17/00*
U.S. Cl. 361—433 2 Claims

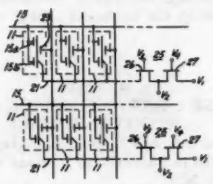


1. Method for providing an anode lead wire and a cathode lead wire on a solid electrolytic capacitor having a substantially cylindrical body including an anode lead out wire extending along the longitudinal axis of said cylindrical body, a dielectric layer on the anode, and a solid electrolytic cathode layer on the dielectric layer, said method comprising: providing a pair of cantilever mounted preshaped, resilient wires, each wire of said pair of wires having resiliently deformable extended portions substantially coaxial with each other and the longitudinal axis of the cylindrical body and substantially lying in a selected plane containing the longitudinal axis of said cylindrical body, one of said pair of wires being an anode lead wire and the resiliently deformable extended portion thereof having an end portion transverse to the longitudinal axis of said cylindrical body and lying substantially in said selected plane, the other wire of said pair of wires being the cathode lead wire and the resiliently deformable extended portion thereof having an arcuate portion spaced from said end portion of said anode wire lying in a plane transverse to said selected plane, said arcuate portion having a shape generally conforming to the substantially cylindrical capacitor body; positioning said cylindrical capacitor body with respect to said anode lead wire such that said anode lead out wire of said cylindrical capacitor body is closely adjacent to said transverse end portion of said anode lead wire; positioning said cylindrical capacitor body with respect to said cathode lead wire such that the solid electrolytic cathode layer of said cylindrical capacitor body is closely adjacent to the generally conforming arcuate portion of said cathode lead wire; subjecting said resiliently deformable extended protion of said cathode lead wire to a force which is in a direction transverse to said selected plane, said force being sufficient to establish a nesting contact between said arcuate portion of said cathode lead wire and said cylindrical capacitor body; soldering said arcuate portion to said capacitor body while said force is applied; subjecting said anode lead wire to a force which is in a direction transverse to said selected plane, said force being sufficient to establish contact between said end portion of said anode lead wire and said anode lead of said capacitor body and welding said end portion to said anode lead while said force is applied.

4,185,318
CHARGE STORAGE MEMORY WITH ISOLATION NODAL FOR EACH BIT LINE

William E. Engeler, Scotia; Jerome J. Tiemann, Schenectady, and Richard D. Baertsch, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 137,238, Apr. 26, 1971, abandoned.
This application Jun. 15, 1978, Ser. No. 915,784
Int. Cl.[2] G11C *11/34, 7/00*
U.S. Cl. 365—183 7 Claims



1. Apparatus for storing and retrieving information in the form of electrical charge comprising
a semiconductor substrate of one conductivity type,
an insulator layer overlying said substrate and having a plurality of cellular regions, each of substantially lesser thickness than the surrounding regions thereof,
a first conductor member overlying at least a portion of each of said cellular regions,
means for biasing said first conductor member in relation to said substrate to form a plurality of charge storage regions in a surface adjacent portion of said substrate, each storage region underlying said first conductor member and a respective cellular region,
an opposite conductivity type region in said substrate spaced from said storage regions forming a receive-source region,
a plurality of barrier regions in said substrate each between a respective storage region and said receive-source region,

means for controlling the surface potentials of said barrier regions including a plurality of second conductor members each insulatingly overlying a respective barrier region,

collecting means connected to said receive-source region for collecting charge, said collecting means including a first field effect transistor and a second field effect transistor having their current conduction paths connected in series in the order named between said receive-source region and a bias voltage source, the source and drain of said first and second transistors connected in common providing a nodal capacitance,

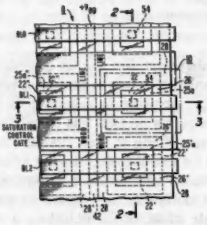
means for biasing said transistors to provide a potential on said nodal capacitance which is energetically favorable for charge to transfer from said receive-source region to said nodal capacitance.

4,185,319

NON-VOLATILE MEMORY DEVICE

Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corp., New York, N.Y.

Filed Oct. 4, 1978, Ser. No. 948,507
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—185 **12 Claims**



8. A solid state memory comprising:

a body of semiconductor material predominantly of one conductivity type said body having a surface;

a matrix array of memory cells, formed along one surface of said body arranged in rows and columns;

each one of said cells comprised of a storage device (P_S) in series with a switching device (P_W), for selection, including:

a field shield comprising a first frame-like structure including a layer of insulating material on said surface and a layer of conductive material on said layer of insulating material, said field shield having a closed geometry which encloses a first portion of said surface and separates said first portion of said surface from a second portion of said surface;

a semiconductor device extending into said body in said first portion of said surface, said semiconductor device comprising:

i. a second frame-like structure including a layer of insulating material on said first portion of said surface and a layer of conductive material on said layer of insulating material, said second frame-like structure having a closed geometry separating an outer portion of said first portion of said surface drom an inner portion of said first portion of said surface; said second frame-like structure defining the gate of said storage device;

ii. a first region of opposite conductivity type to said body extending into said body from said inner portion of said first portion of said surface, said first region being surrounded by said second frame-like structure; said first region defining the drain region of said storage device;

iii. a second region of opposite conductivity type to said body extending into said body from said outer portion of said first portion of said surface, said second region surrounding said second frame-like structure; said second region defining the source region of said storage device and the drain region of said switching device;

a third region of opposite conductivity type to said body extending into said body surrounding said first frame like structure; said third region defining the drain region of said switching device and said first frame-like structure functioning as the gate of said switching device;

said field shield of one device in a column being common to adjacent devices in that column and extending the length of a column,

a field insulating layer overlying said frame-like structures, for insulating (floating) said second frame like structures;

row conductors disposed above said field layer in a generally orthogonal direction to said columns, each row conductor overlying a row of memory cells and making contact to said first region via contact holes formed in insulating layers between a location on said first region at said surface of said body and said conductor; and

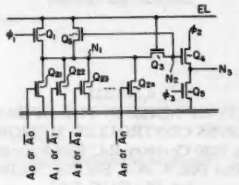
a control gate disposed above said field layer and extending along said row conductors and overlying a portion of said second frame like structures.

4,185,320

DECODER CIRCUIT

Yoshihiro Takemae, Kawasaki, and Masao Nakano, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 28, 1978, Ser. No. 964,186
Claims priority, application Japan, Dec. 12, 1977, 52-149064
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—203 **11 Claims**



1. A decoder circuit comprising:

an output word line for providing input address signals;

a charge up transistor, having a charge contained thereon, for maintaining the content of said input address signals;

a power supply switching transistor for controlling a charge up current which is supplied to said charge up transistor;

a predetermined number of selection transistors for selecting said output word line, said predetermined number of selection transistors operatively connected at a connection node between said charge up transistor and said power supply switching transistor;

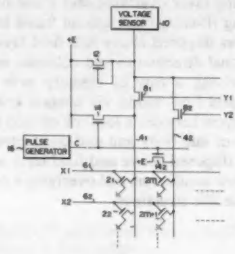
a bootstrap transistor operatively connected at an opposite side of said connection node with respect to said charge up transistor;

a charge compensation transistor, for compensating for the charges of said charge up transistor, operatively connected at a connection node between said charge up transistor and said power supply swtiching transistor, said charge compensation transistor being placed in an on or off state depending upon the potential level of said output word line.

4,185,321
SEMICONDUCTOR MEMORY WITH PULSE CONTROLLED COLUMN LOAD CIRCUIT

Hiroshi Iwahashi, and Seigo Suzuki, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Mar. 22, 1978, Ser. No. 889,012
Claims priority, application Japan, Mar. 24, 1977, 52-32400
Int. Cl.[2] G11C 7/00, 7/06
U.S. Cl. 365—204 34 Claims

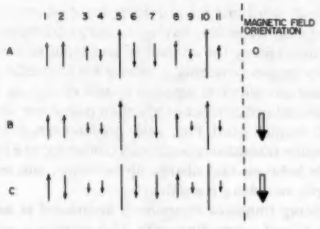


1. A semiconductor memory device comprising a plurality of row lines, a plurality of memory cells controlled by a signal applied to said plurality of row lines, a plurality of column lines connected with said plurality of memory cells, column line select means for selecting one of said plurality of column lines, a load circuit connected between said plurality of column lines and a power source terminal, and means for applying a control pulse signal to said load circuit in synchronism with level change of an address signal to vary a resistance value of said load circuit.

4,185,322
ELIMINATION OF NOISE IN THE OPERATION OF A STRESS CONTROLLED MEMORY

Klaus Schroder, 7226 Coventry Rd., East Syracuse, N.Y. 13057

Filed Dec. 9, 1976, Ser. No. 749,105
Int. Cl.[2] G11C 7/02
U.S. Cl. 365—209 5 Claims

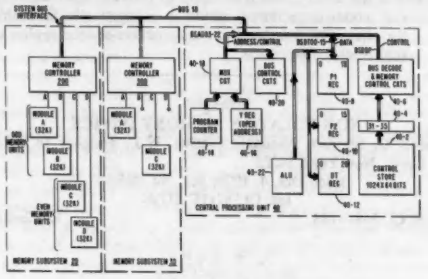


1. I claim a system of eliminating "noise" signals in a stress wave controlled memory consisting of a non-magnetic matrix with ferromagnetic particles with a range of coercive fields by applying a field to the memory before reading the memory which is so large that it will line up particles with permanent dipoles with too low coercive fields, eliminating thereby noise signals which interfere with reading the memory.

4,185,323
DYNAMIC MEMORY SYSTEM WHICH INCLUDES APPARATUS FOR PERFORMING REFRESH OPERATIONS IN PARALLEL WITH NORMAL MEMORY OPERATIONS

Robert B. Johnson, Billerica, and Chester M. Nibby, Jr., Peabody, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jul. 20, 1978, Ser. No. 926,480
Int. Cl.[2] G11C 13/00
U.S. Cl. 365—222 38 Claims



1. A memory subsystem for use in a system including a processing unit coupled to a bus in common with said subsystem, said unit being operative in response to instructions to generate memory requests on said bus to said subsystem, said requests coded for specifying at least first and second types of memory operations for fetching and storing information within said memory subsystem, said memory subsystem comprising:

at least a pair of independently operated and addressable memory module units, each including a number of addressable arrays of memory cells whose contents must be refreshed within a predetermined time interval, said arrays being divided into a number of rows and columns and each of said memory module units including accessing means for selectively accessing a row within each of said number of arrays and causing the refreshing of all of the memory cells within said row; and,

control means coupled to said bus for controlling the operation of said pair of memory module units in response to said memory requests, said control means including:

mandatory refresh control means for refreshing the memory cells of a different one of each of said rows within said arrays within one of a plurality of refresh time intervals evenly distributed throughout said predetermined time interval, said mandatory refresh control means being coupled to said accessing means of each of said pair of independently operated addressable module units for initiating the refresh operation on said different one of each of said rows at the end of said one of said refresh time intervals; and,

hidden refresh control means coupled to said mandatory refresh control means and to said accessing means of each of said pair of independently pair of independently operated addressable module units, said hidden refresh control means in response to memory request signals designating said first type of memory operation for fetching or storing said information being operative to selectively condition the accessing means of one of said memory module units to perform a refresh cycle of operation upon one of said different rows of said memory cells of said one memory module in parallel with the accessing of the memory cells of said one of said different rows of the other one of said memory module units and said hidden refresh means including means operative upon performing a predetermined number of refresh cycles of operation upon said different rows within said pair of said memory module

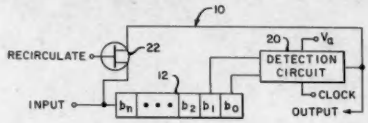
units within said refresh time interval to inhibit said mandatory refresh control means for initiating said refresh operation within said one refresh time interval.

4,185,324

DATA STORAGE SYSTEM

William P. Ward, Poway, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 3, 1978, Ser. No. 930,613
Int. Cl.² G11C *19/28, 7/06*
U.S. Cl. 365—222 **10 Claims**



3. In a memory system having a charge transfer device shift register with a plurality of storage cells, with each storage cell for holding a charge level representing data:

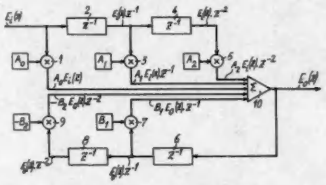
a detection circuit for detecting the value of the charge level in one of said storage cells, including comparison means for comparing the charge level in said one storage cell with the charge level in an adjacent storage cell having a known charge level value and adjustment means for adding an adjustment signal to the value of one of the charge levels in said one storage cell and said adjacent storage cell to compensate for cell-to-cell signal loss prior to comparing of the charge levels by said comparison means.

4,185,325

RECURSIVE DIGITAL FILTER HAVING COEFFICIENTS EQUAL TO SUMS OF FEW POWERS OF FEW POWERS OF TWO TERMS

Jean G. Appel, 72, rue du Plateau, Chatillon, France (92320)

Filed Mar. 10, 1978, Ser. No. 885,437
Claims priority, application France, Feb. 27, 1978, 78 05596
Int. Cl.² G11C *13/00*
U.S. Cl. 365—244 **36 Claims**



1. A recursive digital filter deriving the samples of a filtered output signal at a present sampling instant from the samples of an input signal to be filtered at said present sampling instant and at two preceding consecutive sampling instants and from the samples of said filtered output signal at said two preceding consecutive sampling instants, said recursive digital filter comprising:

first memory means for storing the samples of the input signal at said present sampling instant and preceding consecutive sampling instants;

second memory means for storing the samples of the filtered output signal at said present sampling instant and preceding consecutive sampling instants;

a digital adder means;

means for the output of said digital adder means to connecting said second memory means;

a first digital multiplier means for multiplying the samples of the input signal comprising at most two first multiplier units inserted between the part of said first memory means storing the sample of the input signal at the present sampling instant and said digital adder means, at most three second multiplier units inserted between the part of said first memory means storing the sample of the input signal at the first preceding sampling instant and said digital adder means, and at most two third multiplier units inserted between the part of said first memory means storing the sample of the input signal at the second preceding sampling instant and said digital adder means, all said multiplier units of said first digital multiplier means being power of two multiplier units;

a second digital multiplier means for multiplying the samples of the filtered output signal, comprising two first multiplier units connected in parallel and inserted between the part of said second memory means storing the sample of the filtered output signal at the first preceding sampling instant and said digital adder means and three second multiplier units connected in parallel and inserted between the part of said second memory means storing the sample of the filtered output signal at the second preceding sampling instant and said digital adder means, all said multiplier units of said second multiplier means being power of two multiplier units; and

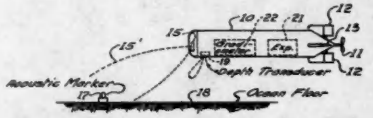
a third digital multiplier means comprising a single multiplier unit inserted between said digital adder means and the recursive digital filter output, said single multiplier unit being a multiplier unit by 2^{-n}, where n is a positive integer at least equal to 5.

4,185,326

MINEHUNTING VEHICLE WITH A BUILT-IN SEARCH PATTERN

Clyde A. Whittaker, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1960, Ser. No. 11,107
Int. Cl.² G01S *9/66*
U.S. Cl. 367—96 **5 Claims**



1. In a self-propelled elongated underwater vehicle having a rudder and diving fins adapted to execute a search pattern about an acoustic marker on the ocean floor and adapted to release an explosive charge carried thereby under the control of a mine sensing device, the combination of right and left bow hydrophones having substantially the same directivity patterns and located symmetrically with respect to the vertical plane defined by the longitudinal axis of said vehicle, an output circuit for each of said hydrophones, a servomechanism for adjusting the rudder, means for comparing the signals in said output circuits and correspondingly powering the rudder servomechanism, a gate circuit connected to be in closed condition only when a signal is present in either of said output circuits, a voltage source connected through said gate circuit to said servomechanism and operable to adjust said rudder to full rudder position in a direction corresponding to the polarity chosen for said voltage source, means for developing a control signal in accordance with the departure of the vehicle from a selected distance above the ocean floor, and means responsive to said control signal and adapted for operating said diving fins.

DESIGN PATENTS

GRANTED JAN. 22, 1980

ERRATA

For CLASS	See PATENT NO.
D02–246	254,023

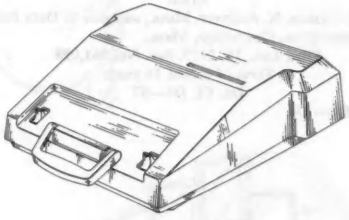
DESIGNS

JANUARY 22, 1980

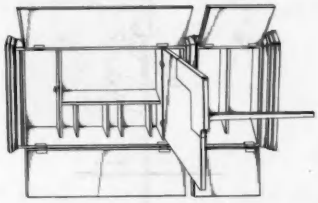
253,976
HARD HEAD GEAR HEAD PROTECTOR
Jacob Davidson, The Philadelphian, Apt. 6A10, 2401 Pennsylvania Ave., Philadelphia, Pa. 19130
Continuation-in-part of Ser. No. 570,216, Apr. 21, 1975, abandoned. This application Apr. 14, 1977, Ser. No. 788,576
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—243

253,977
COLLAR CLIP
William F. Mahoney, Box 1240, Selinsgrove, Pa. 17870
Filed Jul. 25, 1977, Ser. No. 818,973
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—407

253,978
CARRYING CASE FOR A TYPEWRITER
Robert Osit, Audubon, Pa., assignor to SCM Corporation, New York, N.Y.
Filed Feb. 6, 1978, Ser. No. 875,366
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—72



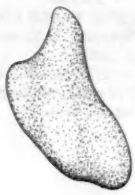
253,979
SEWING CABINET
Robert S. Peets, Watchung; John J. Grzybowski, Rahway, both of N.J., and Sidney A. Lenger, Kernersville, N.C., assignors to The Singer Company, New York, N.Y.
Filed Feb. 13, 1978, Ser. No. 876,967
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—170



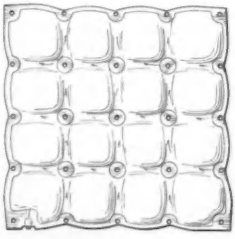
253,980
MULTIPLE TABLE UNIT
Theodore W. Schriever, Syracuse, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 4, 1977, Ser. No. 821,847
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179

253,981
READING STAND FOR EXERCISER
Albert J. Fritz, 1716 Shawnee Trail, Northbrook, Ill. 60062; Norman Centeny, 8022 W. Leland, Norridge, Ill. 60656, and Sigfrid Pantoja, 8737 W. 98th St., Palos Holls, Ill. 60465
Filed Sep. 15, 1977, Ser. No. 833,603
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—184

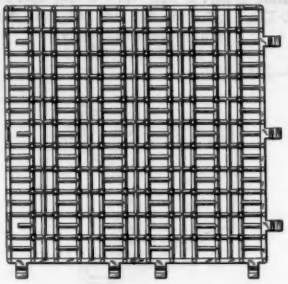
253,982
BACK SUPPORT PAD
John L. Swanson, 394 Pierce St., Apartment 5, St. Paul, Minn. 55104
Filed Aug. 15, 1977, Ser. No. 824,266
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—200



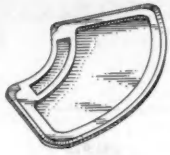
253,983
INFLATABLE CUSHION
Kenneth L. McRight, 7456 S. Oswego, Tulsa, Okla. 74135
Filed Jan. 31, 1977, Ser. No. 763,976
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—204



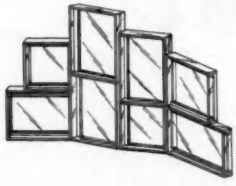
253,984
MAT SECTION
Esko Nissinen, Kaskenkatu 11 D 91, 20700 Turku 70, Finland
Filed Aug. 16, 1977, Ser. No. 825,188
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



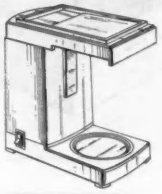
253,985
FLOOR MAT FOR PLACEMENT AT FRONT OF TOILET
George B. Bond, 483 Brookside, Barrington, Ill. 60010
Filed Apr. 11, 1977, Ser. No. 786,474
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—213



253,986
FOLDABLE DISPLAY FOR PHOTOGRAPHS OR THE LIKE
George F. Lyman, N. Andover, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.
Filed Dec. 15, 1977, Ser. No. 861,098
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234



253,987
COFFEEMAKER
David L. Painter, Glenview, Ill., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jun. 6, 1975, Ser. No. 584,667
The portion of the term of this patent subsequent to Jun. 22, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—41

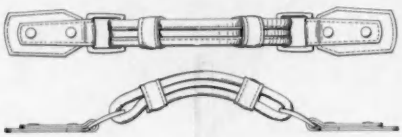


253,988
BEVERAGE CONTAINER
Lee J. Eagar, Box 297, Hurricane, Utah 84737
Filed Nov. 21, 1977, Ser. No. 853,557
Term of patent 7 years
Int. Cl. D7—*06*
U.S. Cl. D7—61

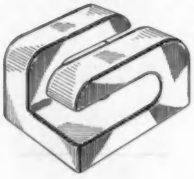
253,989
BARBEQUE MEAT TURNER
Benjamin A. Rhoades, Rte. 1, Box 126, Arroyo Grande, Calif. 93420
Filed Dec. 12, 1977, Ser. No. 859,302
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—102

253,990
FOOT SCRAPER OR SIMILAR ARTICLE
Gilbert D. Atkins, 1815 SW. Boulevard, Wichita, Kans. 67213
Filed Dec. 20, 1977, Ser. No. 863,332
Term of patent 14 years
Int. Cl.[2] D7—*05*
U.S. Cl. D7—182

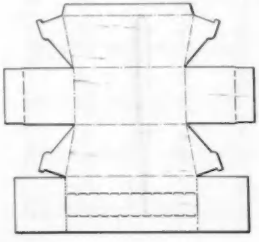
253,991
HANDLE ASSEMBLY FOR LUGGAGE CASE
Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.
Filed Jan. 9, 1978, Ser. No. 868,284
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—306



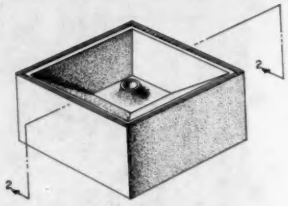
253,992
ROPE CLEAT
Douglas R. Nelson, 206 W. Wabasha St., Duluth, Minn. 55803
Filed Aug. 8, 1977, Ser. No. 822,933
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



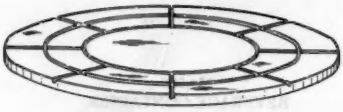
253,993
CARTON BLANK
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Apr. 22, 1977, Ser. No. 790,023
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



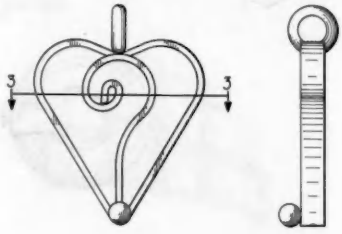
253,994
DISPENSING CONTAINER
Robert F. McCarthy, and Price D. Carter, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 11, 1977, Ser. No. 777,492
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—239



253,995
EXTENSION PLATTER FOR A TRIPLE BEAM SCALE
Robert A. Zohn, and Carole Zohn, both of 18 Spruce St., Great Neck, N.Y. 11021
Filed Nov. 11, 1977, Ser. No. 850,495
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—94

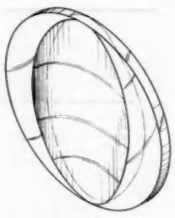


253,996
JEWELRY PENDANT
Lazer L. Shiroka, 10245 N. Carrolton Ave., Indianapolis, Ind. 46280
Filed Nov. 21, 1977, Ser. No. 853,183
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—56

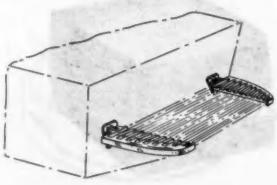


253,997
PEACE-PIPE PENDANT OR SIMILAR ARTICLE
Joseph M. Kaspar, Miami, Fla., assignor to Piscataway-Conoy Indians, Inc., Waldorf, Md.
Filed Dec. 16, 1977, Ser. No. 861,559
Term of patent 07 years
Int. Cl. D11—*01*
U.S. Cl. D11—811

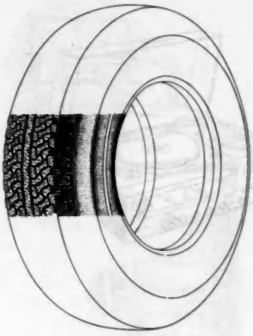
253,998
ORNAMENT
George C. Sun, 530 Rhode Island Ave., Cherry Hill, N.J. 08002
Filed Jan. 27, 1978, Ser. No. 873,092
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—121



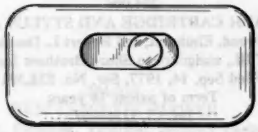
253,999
SET OF BOAT TRANSOM SWIM PLATFORM END BRACKETS
Benjamin H. Richards, 2648 Military, and Charles A. Schwab, 2858 Military, both of Port Huron, Mich. 48060
Filed Jun. 23, 1977, Ser. No. 809,300
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D12—70



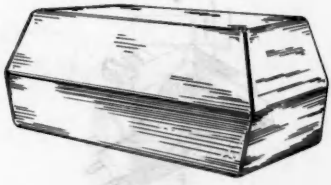
254,000
TIRE
Michael A. Kolowski, Tallmadge; Daniel J. Lindner, North Canton, both of Ohio; Henry T. Kwee, Stow; Charles W. Roberts, Akron, Ohio, and Harold D. Fetty, Birmingham, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 14, 1978, Ser. No. 877,787
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



254,001
LIGHT DIMMER SWITCH
Noel Mayo, Philadelphia, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.
Filed Sep. 27, 1976, Ser. No. 727,378
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



254,002
ELECTRICAL CONTROL ENCLOSURE
Gregory Schafer, 9847 W. 75th Way, Arvada, Colo. 80005
Filed Nov. 7, 1977, Ser. No. 849,455
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—40



254,003

COMBINED CASSETTE PLAYER AND RECORDER, PHONOGRAPH, RADIO RECEIVER AND AMPLIFIER

Shogo Imai, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 3, 1977, Ser. No. 756,252

Term of patent 14 years

Int. Cl. D14—*01, 03*

U.S. Cl. D14—5

254,004

PHONOGRAPH CARTRIDGE AND STYLUS ASSEMBLY

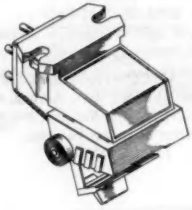
James J. Wellwood, Elmhurst, and Robert L. Deschamps, Wheaton, both of Ill., assignors to Shure Brothers Incorporated

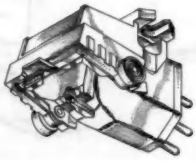
Filed Sep. 14, 1977, Ser. No. 833,391

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—28





254,005

COMBINED PORTABLE COMPUTER AND DATA DISPLAY

Zadock J. B. W. Reid, and Werner Lightner, both of Chicago, Ill., assignors to Computer Tech, a division of Computache, Inc.

Filed Mar. 16, 1978, Ser. No. 887,457

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—43

254,006

TRANSACTION TERMINAL ADJUNCT OR SIMILAR ARTICLE

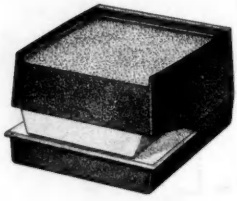
Donald M. Genaro, Haworth, N.J.; Gordon E. Sylvester, Jamaica, N.Y., and Daniel W. Tyler, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 2, 1977, Ser. No. 802,659

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—45

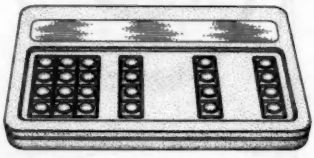


254,007

TELEPHONE ACCESSORY KEYBOARD

Jan Hampf, Skrö, Sweden, assignor to Tateco AB, Sweden

Filed Sep. 22, 1977, Ser. No. 835,844
Claims priority, application Sweden, Mar. 22, 1977, 77-0651
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66

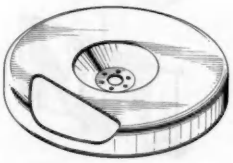


254,008

BLADE HOUSING FOR A LAWN MOWER

Harold P. Jackson, McDonough, Ga., assignor to McDonough Power Equipment Division of Fuqua Industries, Inc., McDonough, Ga.

Continuation-in-part of Ser. No. 795,325, May 9, 1977, Pat. No. Des. 250,027. This application Aug. 10, 1978, Ser. No. 932,752
The portion of the term of this patent subsequent to Oct. 24, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—17

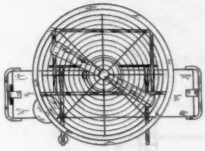


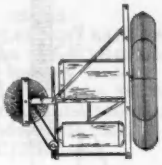
254,009

WINDOW WASHING MACHINE

Dennis D. Stokebrand, P.O. Box 80624, Lincoln, Nebr. 68501

Filed Sep. 29, 1977, Ser. No. 837,667
Term of patent 14 years
Int. Cl. D23—*04*; D15—*05*
U.S. Cl. D15—34



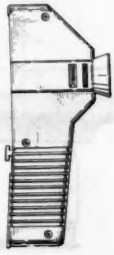


254,010

FILM CASSETTE VIEWER

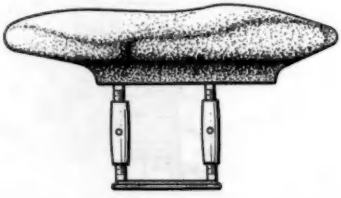
Ernst K. Elsner, Bangkok, Thailand, assignor to Qualidux Industrial Company Limited, Aberdeen, Hong Kong

Filed Oct. 31, 1977, Ser. No. 847,143
Claims priority, application United Kingdom, Jul. 18, 1977, 980807
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—17



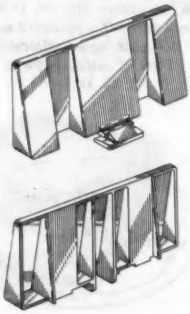
254,011
GUITAR
Joel M. Cohen, 3 Byfield Pl., Huntington Station, N.Y. 11746
Filed Nov. 7, 1977, Ser. No. 848,829
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

254,012
VIOLIN CHIN REST
Kathleen A. Lenski, 1659 Crescent Pl., Venice, Calif. 90291
Filed Dec. 30, 1977, Ser. No. 866,470
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20



254,013
COMBINED HOLDER FOR A CALENDAR, WRITING INSTRUMENT AND NOTE PAPER DISPENSER
Thomas Intini, Ville Brossard, Canada, assignor to Mayled/Intini Inc., Pickering, Canada
Filed Apr. 27, 1977, Ser. No. 791,582
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—21

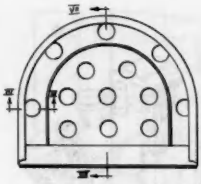
254,014
FOLLOWER BLOCK FOR A CARD FILE
Gary A. Dolphin, Sr.; James F. Hampshire, and Greg P. Terek, all of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Dec. 1, 1977, Ser. No. 856,321
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—99



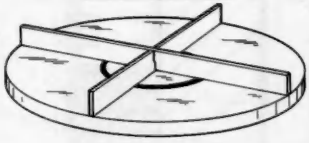
254,015
DECAL OR SIMILAR ARTICLE FOR WEARING APPAREL
Carl G. Adolph, 453-5 W. A Ave., Fort Ritchie, Md. 21719
Filed Dec. 5, 1977, Ser. No. 857,410
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D20—12

254,016
GARMENT SIZE DIVIDER
William M. Beck, 2421 Elwood Dr., Edmond, Okla. 73034
Filed Mar. 27, 1978, Ser. No. 890,862
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—28

254,017
GAME TARGET
Edmund F. Norden, 5157 Henry, Muskegon, Mich. 49441
Division of Ser. No. 585,617, Jun. 10, 1975. This application May 23, 1977, Ser. No. 799,746
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—8

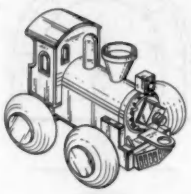


254,018
TABLE FOR PLAYING A BALL GAME
Nils O. S. Malm, Lupinvagen 12, and Carl G. Larsson, Lupinvagen 22, both of S162 35 Vällingby, Sweden
Filed Nov. 9, 1977, Ser. No. 850,055
Claims priority, application Sweden, May 26, 1977, 77-1200
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—14

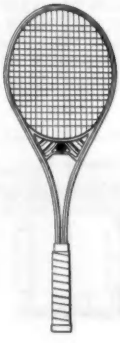


254,019
TENNIS TRAINING DEVICE OR THE LIKE
Howard B. Fordon, 2566 Andrews Ave., Melbourne, Fla. 32935
Filed Dec. 1, 1977, Ser. No. 856,260
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—62

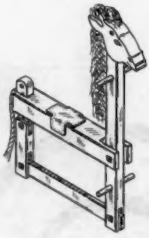
254,020
TOY LOCOMOTIVE OR THE LIKE
Donald L. Greenwood, Longmont, Colo., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed May 1, 1978, Ser. No. 901,961
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—129



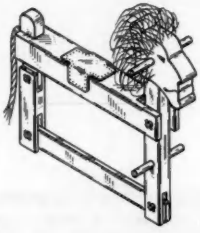
254,021
GAMES RACKET
Robert C. Haines, Huddersfield, England, assignor to Dunlop Limited, London, England
Filed Oct. 19, 1977, Ser. No. 843,359
Claims priority, application United Kingdom, Apr. 21, 1977, 979759
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212



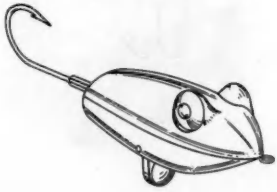
254,022
GIRAFFE SWING SEAT
Jane C. Knight, 316 Ralston Ave., and Robert M. Norman, 370 Panoramic Way, both of Mill Valley, Calif. 94941
Filed Aug. 8, 1977, Ser. No. 822,934
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246



254,023
LION SWING SEAT
Jane C. Knight, 316 Ralston Ave., and Robert M. Norman, 370 Panoramic Way, both of Mill Valley, Calif. 94941
Filed Aug. 8, 1977, Ser. No. 822,936
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246

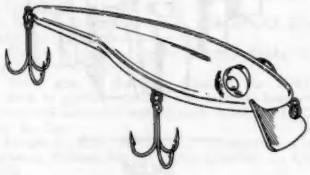


254,024
FISHING LURE
Douglas W. Parker, 2720 S. Waldron Rd., Fort Smith, Ark. 72901
Filed Nov. 25, 1977, Ser. No. 854,997
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

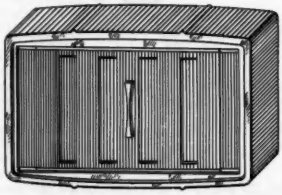


254,025
FISHING LURE
Douglas W. Parker, 2720 S. Waldron Rd., Fort Smith, Ark. 72901
Filed Jan. 30, 1978, Ser. No. 873,281
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

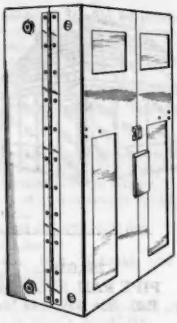
254,026
FISHING LURE
Douglas W. Parker, 2720 S. Waldron Rd., Fort Smith, Ark. 72901
Filed Nov. 25, 1977, Ser. No. 855,000
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

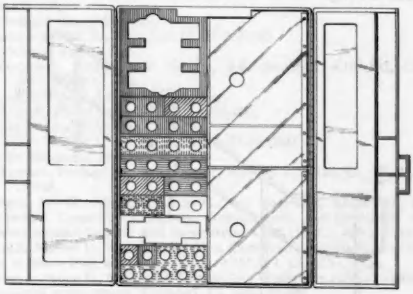


254,027
ROOM DEODORANT DISPENSER
Richard C. Palson, Medfield, and John C. Armstrong, Milton, both of Mass., assignors to The Pharmasol Corporation, Mass.
Filed Dec. 18, 1978, Ser. No. 970,612
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

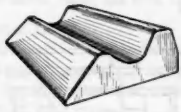


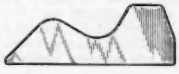
254,028
CARDIOPULMONARY RESUSCITATION KIT
Robert T. McKenzie, Manlius, N.Y., assignor to Bristol-Myers Company, New York, N.Y.
Continuation-in-part of Ser. No. 931,836, Aug. 7, 1978. This application Dec. 14, 1978, Ser. No. 969,576
Term of patent 14 years
Int. Cl. D24—*01;* D6—*01*
U.S. Cl. D24—1.1



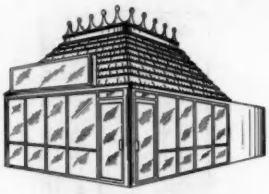


254,029
MEDICAL PILLOW
Alfred T. Barbagallo, 5217 Orinda, Las Vegas, Nev. 89120
Filed Aug. 15, 1977, Ser. No. 824,985
Term of patent 14 years
Int. Cl. D6—*09;* D24—*99*
U.S. Cl. D24—36

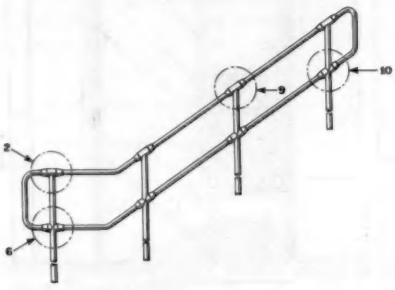




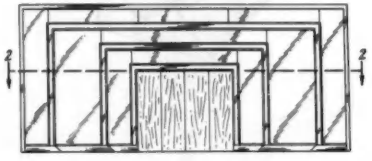
254,030
FOOD SERVICE BUILDING
Sylvester E. Theiss, 1122 Parkhaven Dr., Richardson, Tex. 75080
Filed Apr. 18, 1977, Ser. No. 788,906
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—25



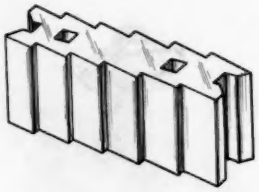
254,031
PIPE RAIL SYSTEM
Thomas Souza, Jr., P.O. Box 579, 145 Hekili St., Kailua, Hi. 96734
Filed Jun. 28, 1977, Ser. No. 811,458
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—44



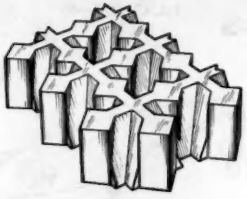
254,032
STORE FRONT
Charles E. Broudy, Narberth, Pa., assignor to Hart Schaffner & Marx, Chicago, Ill.
Filed Jul. 18, 1977, Ser. No. 816,518
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—59



254,033
REVETMENT LINK BLOCK
George H. Amber, Birmingham, Mich., assignor to Revetment Products, Ltd., Royal Oak, Mich.
Filed Oct. 11, 1977, Ser. No. 840,669
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—87



254,034
REVETMENT GRID
George H. Amber, Birmingham, Mich., assignor to Revetment Products, Ltd., Royal Oak, Mich.
Filed Oct. 11, 1977, Ser. No. 840,670
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—91



254,035
FINGER HELD MAKE UP APPLICATOR OR IMPLEMENT
Jean-Louis Guerét, Paris, France, and Nancy Adams, Westport, Conn., assignors to L'Oreal, Paris, France
Filed May 23, 1977, Ser. No. 799,733
Claims priority, application France, Nov. 26, 1976, 75.247; Apr. 14, 1977, 75.600
Term of patent 7 years
Int. Cl. D28—*03*
U.S. Cl. D28—7

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JANUARY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Ward, John W.; and Tankersley, Robert W., Jr., 4,185,097, Cl. 424-195.000.

A. Menarini S.A.S.: *See*—
Meli, Alberto; Bianchini, Claudio; del Soldato, Piero; Ghelardoni, Mario; Pestellini, Vittorio; and Volterra, Giovanna, 4,185,124, Cl. 424-324.000.

A & S Building Systems, Inc.: *See*—
East, James R., 4,184,299, Cl. 52-463.000.

A/S Norcem: *See*—
Gjerde, Arne, 4,184,394, Cl. 83-477.100.

Aamodt, Leonard C.: *See*—
Murphy, John C.; and Aamodt, Leonard C., 4,184,768, Cl. 356-326.000.

AB Coripen: *See*—
Toorell, Sven, 4,184,734, Cl. 339-210.00T.

AB Sture Ljungdahl: *See*—
Rosendahl, Bengt, 4,184,670, Cl. 271-12.000.

AB Svensk Nivakontroll: *See*—
Bengtsson, Nils A., 4,185,207, Cl. 307-118.000.

Abbott Laboratories: *See*—
Jenney, Hilas L.; and Mlay, John, Jr., 4,184,367, Cl. 73-37.000.
McIntire, Floyd C., 4,185,090, Cl. 424-92.000.
Smith, Robert A., 4,185,120, Cl. 424-337.000.
Standley, Wendell E.; and Naureckas, Edward M., 4,184,362, Cl. 73-40.700.

Abe, Setsuo; Asakura, Tomomi; Shirato, Takeshi; and Miyake, Motomasa, to Mitsui Engineering & Shipbuilding Co., Ltd.; and Nippon Steel Corporation. Method and apparatus for recovering energy possessed by exhaust gas from blast furnace by turbine. 4,184,323, Cl. 60-39.030.

Abels, Theodor; Honecker, Guenther; and Goetz, Bernhard, to Linde Aktiengesellschaft. Steerable axle assembly for a floor-type industrial vehicle. 4,184,561, Cl. 180-155.000.

Abrahamson, Erik R. Receptacle support. 4,184,659, Cl. 248-146.000.

ACF Industries, Incorporated: *See*—
Rollins, Dallas W.; Behle, Gunter R.; and Reedy, Charles E., 4,184,663, Cl. 251-144.000.

Achelpohl, Fritz; and Feldkamper, Richard, to Windmoller & Holscher. Sack of plastics material with internal fastener and base covering sheet and method of making same. 4,184,627, Cl. 229-60.000.

Acla, Howard L.: *See*—
Ritsko, Joseph E.; Acla, Howard L.; Vanderpool, Clarence D.; Scheithauer, William, Jr.; and Harris, Geoffrey L., 4,184,868, Cl. 75-0.500.

Acorn Engineering Co.: *See*—
Morris, Earl L., 4,184,702, Cl. 285-39.000.

Acoustical Design Incorporated: *See*—
Cunningham, Donald R.; and Sulewsky, James E., 4,185,167, Cl. 179-1.0AA.

Actionair Equipment Limited: *See*—
Magill, Robert J.; and Field, Sydney J., 4,184,288, Cl. 49-7.000.

Adachi, Katsumi: *See*—
Mitsuda, Katsumi; Yamamoto, Katsuhiko; Adachi, Katsumi; Tsujihara, Susumu; Saeki, Taiichi; and Takeda, Minoru, 4,185,301, Cl. 358-242.000.

Adair, Virginia M. Air moving simulated cigarette device. 4,184,496, Cl. 131-170.00A.

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Fauth, Thomas A.; and Adamski, Joseph A., 4,185,081, Cl. 423-299.000.

Adlam, Joseph D., to Union Carbide Corporation. Laser welding. 4,185,185, Cl. 219-121.0LM.

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Farrell, Bernard T., 4,184,828, Cl. 425-143.000.

Aeppli, Kurt, to Zellweger Uster, Ltd. Determination of yarn defects. 4,184,769, Cl. 356-430.000.

Aerojet-General Corporation: *See*—
Gracey, Charles M., 4,184,359, Cl. 73-19.000.

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Castro, Bertrand; Menard, Joel; Evin, Genevieve; and Corvol, Pierre, 4,185,096, Cl. 424-177.000.
Derrien, Marcel; Lederer, Edgar; Audibert, Francoise M.; Chedid, Louis; Choay, Jean; and Lefrancier, Pierre, 4,185,089, Cl. 424-88.000.

AGFA-Gevaert Aktiengesellschaft: *See*—
Muller, Jurgen; and Farber, Heinrich, 4,185,200, Cl. 250-471.000.
Odenwalder, Heinrich; and Wernicke, Ubbo, 4,184,875, Cl. 430-407.000.

Agoston, Mihaly, to Medicor Muvek. Measuring arrangement for decreasing the emotional influence on instrumental diagnostical measurements. 4,184,485, Cl. 128-670.000.

Ahlgren, David W., to Paulucci, Jeno F. Foil sheet for cooking an item of food. 4,184,421, Cl. 99-450.000.

Ahlgrim, Michael; Mietens, Gerhard; and Zygmann, Helga, to Hoechst Aktiengesellschaft. Electropolishing process. 4,184,932, Cl. 204-129.430.

Ahmad, Shamim: *See*—
Shippy, Ronald L.; and Ahmad, Shamim, 4,184,998, Cl. 260-42.150.

Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Stephan, Herbert; and Stark, Friedrich, to Leybold-Heraeus GmbH. Vacuum coating apparatus having a plurality of lock chambers. 4,184,448, Cl. 118-729.000.

Airlette Corporation: *See*—
Jarnot, Frank R., 4,184,414, Cl. 98-37.000.

Aisan Industry Co., Ltd.: *See*—
Nakamura, Norihiko; Itoh, Takaaki; and Misumi, Toshimi, 4,185,054, Cl. 261-44.00C.

Aisin Seiki Kabushiki Kaisha: *See*—
Kondo, Hiroyuki, 4,184,716, Cl. 303-6.00C.
Maeda, Hiroaki, 4,184,385, Cl. 74-687.000.
Mori, Keizi, 4,184,710, Cl. 296-137.00E.

Ajinomoto Company Incorporated: *See*—
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Akizawa, Nobuo. Apparatus for washing cereals. 4,184,775, Cl. 366-169.000.

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Leinfelt, Karl E., 4,184,225, Cl. 15-339.000.

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Borjesson, Anders; and Narbro, Alf, deceased, 4,184,582, Cl. 198-339.000.

Aktiengesellschaft Adolph Saurer: *See*—
Ruesch, Peter, 4,184,329, Cl. 60-322.000.

Akzona Incorporated: *See*—
Griset, Ernest J., Jr., 4,184,316, Cl. 57-295.000.

Aladdin Industries, Incorporated: *See*—
Stewart, Herbert M.; and Tanner, William J., 4,184,601, Cl. 215-13.00R.

Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., to American Cyanamid Company. Antilipidemic para-[aryl(alkyl or alkenyl)amino]-benzoic acid derivatives. 4,185,115, Cl. 424-310.000.

Albright, Robert L., to Rohm and Haas Company. Method of recovering uranium from aqueous solution. 4,185,077, Cl. 423-7.000.

Alessio, Lorenzo E., to Black & Decker Inc. Workpiece supporting and clamping arrangement. 4,184,667, Cl. 269-139.000.

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Pevzner, Lev V.; Ustkachkintsev, Alexandr N.; Yakobson, Boris V.; Timofeev, Andrei V.; Furman, Anna A.; Vaskanov, Sergei E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M., 4,184,972, Cl. 252-62.540.

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Allen Organ Company: *See*—
Whitefield, John T., 4,184,403, Cl. 84-1.110.

Allied Chemical Corporation: *See*—
Bedell, John R.; Hemmat, Naim; and Polk, Donald E., 4,184,532, Cl. 164-64.000.

Allied Insulators, Limited: *See*—
Robinson, William G.; and Fellows, Horace G., 4,184,841, Cl. 432-258.000.

Allinson, David J. S.; and Mitchell, Robert W., to British Petroleum Company Limited, The. Physical process. 4,184,953, Cl. 210-82.000.

Alps Electric Co., Ltd.: *See*—
Matsuo, Toshitaka, 4,185,176, Cl. 200-16.00D.

Also Laboratori S.a.S. di Dr.P. Sorbini & C: *See*—
Sorbini, Paolo, 4,185,099, Cl. 424-238.000.

Aluminum Pechiney: *See*—
Barrilon, Eric; and Jarry, Michel, 4,185,055, Cl. 264-29.500.

AM International, Inc.: *See*—
Pick, George G., 4,185,282, Cl. 340-711.000.

Amberg, Christopher P.; and Belcher, Samuel L., to Owens-Illinois, Inc. Drinking lid. 4,184,604, Cl. 220-254.000.

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Sjogren, Karl-Erik, 4,185,157, Cl. 13-1.000.

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Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., 4,185,115, Cl. 424-310.000.
Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,185,032, Cl. 260-506.000.
Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,185,033, Cl. 260-506.000.
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Sarantakis, Dimitrios, 4,185,010, Cl. 260-112.50S.
American Optical Corporation: *See*—
Richards, William; and Grolman, Bernard, 4,184,752, Cl. 351-16.000.
American Science & Engineering, Inc.: *See*—
Jagoda, Neil H.; Ballas, John S.; and Kubierschky, Klaus, 4,185,205, Cl. 307-38.000.
American Screen Printing Equipment Co.: *See*—
Bubley, Henry J.; Lala, Louis A.; and Taylor, Hillman W., 4,184,427, Cl. 101-123.000.
Ames, Allan E.; Bloom, Stanley M.; Hoffman, Arnold; and Norland, Kenneth, to Polaroid Corporation. Electrochemical cell with a cadmium patch electrode. 4,185,144, Cl. 429-156.000.
Ammermann, Harley. Spring cushion mounting for beet harvesting device. 4,184,550, Cl. 171-58.000.
Ammon, J. Preston; and Weaver, Harry R., to Elfab Corporation. Discrete connector. 4,184,735, Cl. 339-217.00S.
Ampco Foods Inc.: *See*—
MaGill, Perry W., 4,184,624, Cl. 229-17.00G.
Anderberg, Nils-Eric. Parking guidance system for aircraft. 4,184,655, Cl. 244-114.00R.
Andersen, Hans C.: *See*—
Dyhr, Jan; Karll, Bent; and Andersen, Hans C., 4,184,810, Cl. 417-363.000.
Anderson, Byron, Jr. Shade apparatus. 4,184,502, Cl. 135-20.00R.
Anderson, Francis J., to Institute for Industrial Research & Standards. Vibration sensing device. 4,185,180, Cl. 200-61.45R.
Anderson, J. Edward C., to Marquette Metal Products Company. Manually actuated impact tool. 4,184,552, Cl. 173-93.500.
Anderson, Jay. Organic digester apparatus and method. 4,184,892, Cl. 134-24.000.
Anderson, John W.; and Ting, Raymond M. L., to H. H. Robertson Company. Fastening device for wall panel joints. 4,184,301, Cl. 52-478.000.
Anderson, Mark C., to UOP Inc. Fractionation in an adsorptive hydrocarbon separation process. 4,184,943, Cl. 208-310.00R.
Anderson Metal Products Corp.: *See*—
Anderson, William J., 4,184,660, Cl. 248-235.000.
Anderson, Rodger O.; and Piekarski, Arthur J., to General Electric Company. Liquid-cooled turbine rotor. 4,184,797, Cl. 416-95.000.
Anderson, William J., to Anderson Metal Products Corp. Shelf and rod wall bracket. 4,184,660, Cl. 248-235.000.
Andoh, Shizuo: *See*—
Yoshikawa, Kazuo; and Andoh, Shizuo, 4,185,229, Cl. 315-169.400.
Andropov, Jury I.: *See*—
Otopkov, Petr P.; Nozhkina, Alla V.; Kostikov, Valery I.; Andropov, Jury I.; Senchakov, Anatoly I.; Pesina, Anna Y.; and Kabanov, Alexandr V., 4,184,853, Cl. 51-295.000.
Anezaki, Yoshimitsu, to Tokyo Shibaura Electric Co., Ltd. Electron gun structure. 4,185,223, Cl. 313-446.000.
Angell, Richard G., Jr.; and Gross, Laurence H., to Union Carbide Corporation. Process for injection molding thermoplastic articles with reduced combustibility. 4,185,070, Cl. 264-328.000.
Angelucci, Richard J.: *See*—
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., 4,185,130, Cl. 427-47.000.
Angier, Derek J.; and Barnum, Harry W., to Exxon Research & Engineering Co. Neomesophase formation. 4,184,942, Cl. 208-44.000.
Anthony, James R.; and Lortz, Allan R., to Indiana Mills & Manufacturing Inc. Anti-creep seat belt buckle and tongue combination. 4,184,234, Cl. 24-196.000.
Anthony, Thomas R.; and Cline, Harvey E., to General Electric Company. Droplet migration doping using carrier droplets. 4,184,897, Cl. 148-1.500.
Aoki, Eiichiro: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, 4,184,401, Cl. 84-1.030.
Aoki, Keiji; Uenishi, Shigeru; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method of controlling fuel injection in engine and unit therefor. 4,184,458, Cl. 123-32.0EH.
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Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Saino, Tetsushi; and Koyama, Michinori, 4,185,156, Cl. 562-440.000.
Appel, Jean G. Recursive digital filter having coefficients equal to sums of few powers of few powers of two terms. 4,185,325, Cl. 365-244.000.
Appleby, Anthony-John; and Crepy, Gilles, to Compagnie Generale d'Electricite. Electrolyzer for basic solutions. 4,184,930, Cl. 204-96.000.
Arakawa, Yoshio: *See*—
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,185,016, Cl. 260-239.30T.
Arimitsu, Satoshi: *See*—
Uehara, Hiromichi; and Arimitsu, Satoshi, 4,185,237, Cl. 324-317.000.
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Burkey, David J.; Clark, Lawrence; George, Jay R.; and Long, Harry F., 4,184,940, Cl. 204-281.000.
Mearig, Stephen G., 4,184,910, Cl. 430-323.000.
Rueggeberg, Werner, 4,185,182, Cl. 219-10.55F.
Arnau Pibet, Jose M., to Exin-Iber S. A. Shipbuilding toy. 4,184,285, Cl. 46-24.000.
Arndt, Moritz, to Laeis-Werke AG. Setting and stacking arrangement. 4,184,799, Cl. 414-54.000.
Arnold, Lee. Fluid energy converting method and apparatus. 4,184,805, Cl. 416-1.000.
Aro Corporation, The: *See*—
Clark, Melvin D., 4,184,819, Cl. 418-43.000.
Arvanitakis, Kostas S. Method and apparatus for clarifying liquids through settling. 4,184,955, Cl. 210-83.000.
Asakura, Tomomi: *See*—
Abe, Setsuo; Asakura, Tomomi; Shirato, Takeshi; and Miyake, Motomasa, 4,184,323, Cl. 60-39.030.
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Kiritani, Masaaki; Kanai, Mitsugu; Harada, Denzaburo; Nishida, Chikashi; Asanuma, Yoshiyuki; Ikeda, Kenji; and Masutani, Kouzi, 4,184,387, Cl. 74-720.500.
Atchley, Frank W.; and Vorbeck, Donald W., to Atco Manufacturing Co., Inc. Food holder for small animals. 4,184,450, Cl. 119-51.00R.
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Atchley, Frank W.; and Vorbeck, Donald W., 4,184,450, Cl. 119-51.00R.
Ateliers des Charmilles S.A.: *See*—
Pfau, Jean, 4,185,184, Cl. 219-69.00G.
Atkinson, Lowell G.; and Kennedy, Edmund E., to General Aviation Electronics, Inc. Channel selector system. 4,185,240, Cl. 325-25.000.
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Proud, Joseph M.; Auborn, James J.; and Bessett, Richard A., 4,185,206, Cl. 307-117.000.
Audibert, Francoise M.: *See*—
Derrien, Marcel; Lederer, Edgar; Audibert, Francoise M.; Chedid, Louis; Choay, Jean; and Lefrancier, Pierre, 4,185,089, Cl. 424-88.000.
Automatech Industries, Inc.: *See*—
Rovin, Herman, 4,184,652, Cl. 242-118.200.
Automotive Products Limited: *See*—
Moore, John B.; and Nix, Richard A., 4,184,578, Cl. 192-89.00B.
Avery, John R. Container for fragile articles. 4,184,596, Cl. 206-522.000.
Azam, Guy; Bensussan, Andre; Levaillant, Claude; Huber, Harry; Mevel, Emile; and Tronc, Dominique, to C.G.R. MeV, Inc. Apparatus for treating waste-waters and sludges, comprising an irradiation system using accelerated charged particles. 4,184,956, Cl. 210-103.000.
B. C. Richards & Co. Pty. Ltd.: *See*—
Richards, Cecil G., 4,184,507, Cl. 137-375.000.
B. F. Goodrich & Company: *See*—
Eden, Jamal S., 4,185,039, Cl. 260-654.00A.
Shippy, Ronald L.; and Ahmad, Shamim, 4,184,998, Cl. 260-42.150.
B and W Engineering Services: *See*—
Brown, Jack M., 4,184,372, Cl. 73-572.000.
Babaoglu, Kerinchan: *See*—
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Bachman, Wesley J., to Dickey-john Corporation. Motion detector. 4,185,279, Cl. 340-671.000.
Badalex Limited: *See*—
Grenfell, Julian P.; and Stephens, Stanley W., 4,184,728, Cl. 316-31.000.
Bader, Henry; and Pavelko, Susan J., to Polaroid Corporation. Production of alkyl (alkylthio) carboxylates. 4,185,155, Cl. 560-152.000.
Baertsch, Richard D.: *See*—
Engeler, William E.; Tiemann, Jerome J.; and Baertsch, Richard D., 4,185,318, Cl. 365-183.000.
Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M. Piezoelectric acoustic surface wave filter coupler. 4,185,218, Cl. 310-313.000.
Bailey, David C.; and Klein, Robert E., to Harris Corporation. Film holding system. 4,184,764, Cl. 355-54.000.
Baille-Barrelle, Henri; Vigneron, Maurice; and Lespagnol, Charles, to Boehringer Ingelheim GmbH. Sulfur-containing N-benzylaminoacids and salts thereof. 4,185,114, Cl. 424-301.000.
Baiocchi, Fred: *See*—
France, James R.; Baiocchi, Fred; and Concar, George A., 4,184,978, Cl. 252-309.000.
Bakamjian, Barkev Y., to Standard Oil Company (Indiana). Directional transducers for sonic logger. 4,184,562, Cl. 181-104.000.
Baker, Kenneth R.; and DeVault, Robert T., to Maritec Corporation. Marine engine noise suppressor. 4,184,566, Cl. 181-261.000.
Baker, Max N.; and Martin, Julian R., to R. J. Reynolds Tobacco Company. Machine for applying transfers. 4,184,305, Cl. 53-50.000.
Baker, Peter D.; and Luke, Douglas V., to Smiths Industries Limited. Fibre-optic cable. 4,184,743, Cl. 350-96.230.
Baker, Scott H., to GTE Sylvania Incorporated. Isolated B+ voltage sensing, high-voltage shutdown. 4,185,234, Cl. 315-411.000.
Balco, Inc.: *See*—
Balzer, Claude P.; and Corman, Edward M., 4,184,298, Cl. 52-396.000.
Bald, Hubert. Operation on workpieces. 4,184,669, Cl. 269-309.000.
Ballas, John S.: *See*—
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Bally Manufacturing Corp.: *See*—
Hooker, Donald E., 4,184,683, Cl. 273-143.00R.
Balzer, Claude P.; and Corman, Edward M., to Balco, Inc. Expansion joint filler strip and cover assembly. 4,184,298, Cl. 52-396.000.
Banach, Lester G. Tool slide apparatus. 4,184,718, Cl. 308-3.00A.
Barahia, Manoj M., to General Electric Company. Cushion mount for prime mover. 4,184,658, Cl. 248-606.000.
Barber, Jasper D., to Charlotte Pipe and Foundry Company. Injection molding apparatus for pipe fittings. 4,184,834, Cl. 425-548.000.
Barish, Benjamin J. Electronic tic-tack-toe game. 4,184,676, Cl. 273-237.000.
Barmag Barmer Maschinenfabrik AG: *See*—
Schippers, Heinz, 4,185,064, Cl. 264-210.200.
Barnett, James W., Jr. Molecular model. 4,184,271, Cl. 35-18.00A.
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, to Pfizer Inc. L- and DL- Phenylglycines to treat diseases or conditions attributable to reduced carbohydrate metabolism. 4,185,116, Cl. 424-319.000.
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, to Pfizer Inc. Method of treatment with glycinamides. 4,185,117, Cl. 424-324.000.
Barnum, Harry W.: *See*—
Angier, Derek J.; and Barnum, Harry W., 4,184,942, Cl. 208-44.000.
Barrilon, Eric; and Jarry, Michel, to Aluminum Pechiney. Process for heat-treating carbon blocks. 4,185,055, Cl. 264-29.500.
Barrington, James E.; Williams, David L.; Hitchcock, Charles J.; and Mullins, Thomas J., to United States of America, Health, Education and Welfare. Powder blower device. 4,184,258, Cl. 433-88.000.
BASF Aktiengesellschaft: *See*—
Bjordahl, James, 4,185,312, Cl. 360-106.000.
Schroeder, Wolfgang; and Franzischka, Wolfgang, 4,184,982, Cl. 252-452.000.
Basmajian, Vahan V.: *See*—
Haldeman, Charles W.; and Basmajian, Vahan V., 4,184,469, Cl. 123-193.0CP.
Bass, Merlyn D.: *See*—
de Buhr, Harold E.; Bass, Merlyn D.; and Grimstad, Ronald N., 4,184,558, Cl. 180-14.00R.
Bassett, Max, to Shield, C. Nelson, Jr., Trustee. Submerged pile grouting. 4,184,790, Cl. 405-225.000.
Bastien, Pierre, to Etablissements A. Mure. Shear to cut lengths of elongated metal elements. 4,184,393, Cl. 83-155.100.
Bata, George T.; Spiker, Van P.; and Harper, Patrick D., to Bendix Corporation, The. Bimetal controlled actuator. 4,184,633, Cl. 236-68.00R.
Batz, Hans-Georg; Draeger, Brigitte; Wahlefeld, August W.; Weimann, Gunter; and Gruber, Wolfgang, to Boehringer Mannheim GmbH. Eliminating turbidity in serum undergoing photometric assay. 4,184,848, Cl. 23-230.00B.
Bauer, Peter. Fluidic oscillator and spray-forming output chamber. 4,184,636, Cl. 239-11.000.
Bauman, Ralph E.: *See*—
Cote, Maurice; and Bauman, Ralph E., 4,185,258, Cl. 333-262.000.
Baumann, Hans, to Danielson, Carl Viktor. Composition for dyeing hair containing disperse dyes and a thickening agent. 4,184,843, Cl. 8-10.100.
Bayer Aktiengesellschaft: *See*—
Eckstein, Udo; and Theidel, Hans, 4,184,977, Cl. 252-301.220.
Idel, Karsten-Josef; Frietag, Dieter; and Nouvertne, Werner, 4,185,009, Cl. 260-45.90R.
Kabbe, Hans-Joachim; and Roessler, Peter, 4,185,112, Cl. 424-283.000.
Knipp, Ulrich; and Vente, Peul, 4,185,065, Cl. 264-254.000.
Krejci, Milan; and Kresse, Peter, 4,185,141, Cl. 428-446.000.
Kuhlthau, Hans-Peter, 4,185,151, Cl. 546-167.000.
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,185,058, Cl. 264-49.000.
Reinehr, Ulrich; and Jungverdorben, Hermann-Josef, 4,185,059, Cl. 264-51.000.
Reischl, Artur; and Zenner, Armin, 4,184,990, Cl. 260-29.2TN.
Tacke, Peter; Neuray, Dieter; and Michael, Dietrich, 4,185,044, Cl. 525-1.000.
BBC Brown Boveri & Company Limited: *See*—
Bloch, Heinz, 4,184,337, Cl. 60-660.000.
Beatrice Foods Co.: *See*—
Soran, Robert L., 4,184,229, Cl. 17-11.000.
Spors, Rodney D., 4,185,126, Cl. 426-512.000.
Beck, Harold D.; and Kolthoff, C. Paul, Jr., to International Harvester Company. Heat exchange apparatus including a toroidal-type radiator. 4,184,541, Cl. 165-125.000.
Beck, Louis: *See*—
Kelley, Zar W., 4,184,809, Cl. 417-360.000.
Becker, Kunibert; Elsner, Burghardt; and Lagodka, Gunter, to Gewerkschaft Eisenhutte Westfalia. Mine roof support assembly. 4,184,791, Cl. 405-291.000.
Becker, Willi: *See*—
Wirz, Arno; and Becker, Willi, 4,184,674, Cl. 271-260.000.
Bedell, John R.; Hemmat, Naim; and Polk, Donald E., to Allied Chemical Corporation. Chill roll casting of continuous filament. 4,184,532, Cl. 164-64.000.
Beecham Group Limited: *See*—
Taylor, Andrew W.; Burton, George; and Clayton, John P., 4,185,014, Cl. 260-239.100.
Behar, Marvin L.: *See*—
Nelson, Ned H.; and Behar, Marvin L., 4,184,707, Cl. 294-19.00A.
Behle, Gunter R.: *See*—
Rollins, Dallas W.; Behle, Gunter R.; and Reedy, Charles E., 4,184,663, Cl. 251-144.000.
Behringwerke Aktiengesellschaft: *See*—
Habenstein, Klaus, 4,184,850, Cl. 23-230.00B.
Belcher, Samuel L.: *See*—
Amberg, Christopher P.; and Belcher, Samuel L., 4,184,604, Cl. 220-254.000.
Bell & Howell Company: *See*—
Perret, Ludwig A.; and Miller, James A., 4,185,305, Cl. 360-33.000.
Bell Telephone Laboratories, Incorporated: *See*—
Carbrey, Robert L., 4,185,275, Cl. 340-347.0AD.
Dean, Robert E.; Maydan, Dan; Moran, Joseph M.; and Taylor, Gary N., 4,185,202, Cl. 250-492.00A.
Mounts, Frank W.; Netravali, Arun N.; and Walsh, Kenneth A., 4,185,302, Cl. 358-261.000.
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Schaible, Clifford W., 4,185,242, Cl. 325-363.000.
Belli, Dennis E.: *See*—
Wagner, George R., 4,185,192, Cl. 250-221.000.
Bendix Corporation, The: *See*—
Bata, George T.; Spiker, Van P.; and Harper, Patrick D., 4,184,633, Cl. 236-68.00R.
Betts, Jeri A.; and Spiker, Van P., 4,184,634, Cl. 236-13.000.
Bode, James D.; and Teitelbaum, Bernard R., 4,184,934, Cl. 204-195.00S.
Killian, Bruce A., 4,184,784, Cl. 403-267.000.
Leung, Chun K., 4,184,461, Cl. 123-32.0EH.
Benedetto, Joseph: *See*—
Lamberti, John, 4,184,336, Cl. 60-507.000.
Benedicto, John S. J.; Woodgate, Bruce E.; and Hallberg, Frederick C., to United States of America, National Aeronautics and Space Administration. Method and apparatus for slicing crystals. 4,184,472, Cl. 125-23.00R.
Bengtsson, Nils A., to AB Svensk Nivakontroll. Amplifier system with alternate inputs. 4,185,207, Cl. 307-118.000.
Benguerel, Francois; and Salzmann, Jean-Jacques, to Sandoz Ltd. Anionic azo dyes having a 3-dibenzofuranyl diazo component radical optionally having a 2- or 8-sulfo group. 4,185,013, Cl. 260-152.000.
Benham, Jeffrey W.: *See*—
United States of America, National Aeronautics and Space Administration; Peck, Stephen R.; and Benham, Jeffrey W., 4,185,164, Cl. 174-142.000.
Benkowski, William J.; Fishel, Richard L.; and Maurer, Francis J., to General Tire & Rubber Company, The. Apparatus for reprocessing scrap from fabric reinforced thermoplastic sheet. 4,184,829, Cl. 425-202.000.
Bennett, Charles E., to Motorola, Inc. Heat energized vapor adsorbent pump. 4,184,338, Cl. 62-2.000.
Bennett, Robert G., Jr., to USM Corporation. Roll neckrest support. 4,184,293, Cl. 151-238.00R.
Bennett, William D., to Dunlop Limited. Apparatus for the recovery of vulcanized elastomeric material. 4,184,642, Cl. 241-65.000.
Benson, Richard L.; Hill, Horace E.; and Soderberg, Mark S., to Boeing Company, The. Motor quick-change chuck system for tool having cylindrically shaped adapter portion. 4,184,692, Cl. 279-75.000.
Benson, Robert G. Sound and light display. 4,185,276, Cl. 340-366.00B.
Bensussan, Andre: *See*—
Azam, Guy; Bensussan, Andre; Levaillant, Claude; Huber, Harry; Mevel, Emile; and Tronc, Dominique, 4,184,956, Cl. 210-103.000.
Bentley, Peter N., to Thomas Willett & Company Limited. Pumping system. 4,184,331, Cl. 60-375.000.
Berg, Alexander: *See*—
Eckmayer, Zdenek; Berg, Alexander; and Kuhn, Joachim, 4,185,011, Cl. 260-123.700.
Berg, George W. Reversible hydraulic engine. 4,184,807, Cl. 417-334.000.
Bergwerksverband GmbH: *See*—
Handrick, Kurt; Kolling, Georg; Linden, Clemens; and Droll, Gunter, Jr., 4,185,023, Cl. 260-369.000.
Handrick, Kurt; Kolling, Georg; and Linden, Clemens, 4,185,024, Cl. 260-369.000.
Bernstein, Seymour: *See*—
Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,185,032, Cl. 260-506.000.
Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,185,033, Cl. 260-506.000.
Bernt, Erich: *See*—
Roeschlau, Peter; Bernt, Erich; and Gruber, Wolfgang, 4,184,921, Cl. 435-11.000.
Berry, George J., Sr.: *See*—
Casson, M. E.; Moore, Albert E.; and Berry, George J., Sr., 4,184,815, Cl. 417-477.000.
Berry, Kenneth A.: *See*—
Morcom, William R.; and Berry, Kenneth A., 4,184,933, Cl. 204-192.0EC.
Berta, Joseph M.: *See*—
Podaras, William N.; and Berta, Joseph M., 4,184,420, Cl. 99-427.000.
Bertagni, Jose J. Planar diaphragm and supporting frame assembly. 4,184,563, Cl. 181-171.000.
Bertozzi, Eugene R., to Thiokol Corporation. Elemental sulfur having improved impact resistance. 4,184,890, Cl. 106-287.260.

Bessett, Richard A.: *See*—
Proud, Joseph M.; Auborn, James J.; and Bessett, Richard A., 4,185,206, Cl. 307-117.000.
Bethlehem Steel Corporation: *See*—
Leonard, Regis J., Jr., 4,184,869, Cl. 75-10.00C.
Betts, Jeri A.; and Spiker, Van P., to Bendix Corporation, The. Closed loop control for automatic temperature control system. 4,184,634, Cl. 236-13.000.
Betz Laboratories, Inc.: *See*—
Sujdak, Richard J., 4,185,071, Cl. 422-9.000.
Betzmeir, Helmut, to Messerschmitt-Bolkow-Blohm GmbH. Electrical connector for use inside a tube such as an ejector tube. 4,184,731, Cl. 339-45.00M.
Bevacqua, Louis A., to Motorola, Inc. Tuning apparatus. 4,184,379, Cl. 74-10.330.
Beyhurst, Desire; Bronner, Jean-Jacques; Fuhrer, Jean-Claude; and Kraess, Henri, to La Telephone Industrielle et Commerciale-Telic. Method and apparatus for checking connection paths in a telephone exchange. 4,185,174, Cl. 179-175.20R.
Bhat Industries, Inc.: *See*—
Bhat, Vasanth K., 4,184,969, Cl. 252-8.100.
Bhat, Vasanth K., to Bhat Industries, Inc. Fire- and flame-retardant composition. 4,184,969, Cl. 252-8.100.
Bianchini, Claudio: *See*—
Meli, Alberto; Bianchini, Claudio; del Soldato, Piero; Ghelardoni, Mario; Pestellini, Vittorio; and Volterra, Giovanna, 4,185,124, Cl. 424-324.000.
Biasone, Frank: *See*—
McDonald, Robert L.; and Biasone, Frank, 4,184,519, Cl. 139-425.00A.
Biber, Conrad H.: *See*—
Land, Edwin H.; and Biber, Conrad H., 4,184,756, Cl. 354-33.000.
Bielich, Guillermo J. Hydrotherapeutic foot massager. 4,184,488, Cl. 128-66.000.
Bigelow-Sanford, Inc.: *See*—
Merchant, Hamir D., 4,184,304, Cl. 52-746.000.
Billet, Gilles; and Blottiau, Jean, to Compagnie Industrielle des Telecommunications Cit-Alcatel S.A. Process and apparatus for the automatic inspection of patterns. 4,185,298, Cl. 358-106.000.
Billmeyer, Thomas F.: *See*—
Faehling, Francis L.; Billmeyer, Thomas F.; and Moss, Robert G., 4,184,475, Cl. 126-121.000.
Binder, Rolf; and Staheli, Paul, to Rieter Machine Works Limited. Method of automatically taking in a fibre layer in blow-room machines and apparatus for implementing the method. 4,184,611, Cl. 222-1.000.
Birdsall, Leo S. Toilet flushing apparatus. 4,184,215, Cl. 4-411.000.
Birt, Dennis C. P.; and Pearce, Leonard J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Water activated batteries. 4,185,143, Cl. 429-119.000.
Bischoff, Martin: *See*—
Scheuermann, Fanny; Heidrich, Jochen; and Bischoff, Martin, 4,184,985, Cl. 252-522.000.
Bitny, Mikhail A.: *See*—
Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.
Bixby, Leon C., to Hendrick Manufacturing Company. Method and apparatus for dewatering sludge. 4,184,950, Cl. 210-73.00R.
Bjordahl, James, to BASF Aktiengesellschaft. Transducer positioning apparatus. 4,185,312, Cl. 360-106.000.
Blachly, Donald L.; Hochstatter, Brian R.; and O'Hearne, Robert L., to Emerson Electric Co. Radial arm saw. 4,184,395, Cl. 83-486.100.
Black & Decker Inc.: *See*—
Alessio, Lorenzo E., 4,184,667, Cl. 269-139.000.
Blaha, James G.; Melocik, Grant C.; and Wible, John E., to Towmotor Corporation. Fluid power system. 4,184,333, Cl. 60-420.000.
Blankenship, James O., to Sofisti-Caire Furniture Mfg. Inc. Method of making a cushion construction. 4,184,237, Cl. 29-91.100.
Blas, Amos; and Rabin, Baruch, to Israel Aircraft Industries Ltd. Method of surface hardening stainless steel parts. 4,184,899, Cl. 148-15.500.
Blaschke, Franz: *See*—
Buning, Robert; Blaschke, Franz; and Trautvetter, Werner, 4,185,048, Cl. 525-80.000.
Blatrix, Jean-Pierre, to Societe Generale de Mecanique et de Metallurgie. Devices for the remote distribution of measured amounts of powdery material. 4,184,793, Cl. 406-61.000.
Blixt, Kjell G.; Tornmarck, Sven I. A.; Juhlin, Rolf; Salenstedt, Karl R.; and Tiru, Mandayam, to Kommanditbolaget Kockums Chemical AB & Co. Enzymatic substrate composition adsorbed on a carrier. 4,184,920, Cl. 435-19.000.
Bloch, Heinz, to BBC Brown Boveri & Company Limited. Method and apparatus for regulating a resuperheated steam turbine. 4,184,337, Cl. 60-660.000.
Bloom, Allen; and Hung, Ling K., to RCA Corporation. Novel liquid crystal dyestuffs and electro-optic devices incorporating same. 4,184,750, Cl. 350-349.000.
Bloom, Stanley M.: *See*—
Ames, Allan E.; Bloom, Stanley M.; Hoffman, Arnold; and Norland, Kenneth, 4,185,144, Cl. 429-156.000.
Bloomfield, Edward J. Control units for heating systems. 4,184,635, Cl. 126-419.000.
Blottiau, Jean: *See*—
Billet, Gilles; and Blottiau, Jean, 4,185,298, Cl. 358-106.000.
Blount, David H. Production of amino-silicate compounds, condensation resinous products and foam. 4,185,147, Cl. 521-154.000.
Bock, Erich: *See*—
Braun, Erwin; and Bock, Erich, 4,184,315, Cl. 57-89.000.
Bock, Jan: *See*—
Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, 4,184,988, Cl. 260-23.50A.
Bode, James D.; and Teitelbaum, Bernard R., to Bendix Corporation, The. Protective shield having omni-directional diverter for sensing means. 4,184,934, Cl. 204-195.00S.
Boehringer Ingelheim GmbH: *See*—
Baille-Barrelle, Henri; Vigneron, Maurice; and Lespagnol, Charles, 4,185,114, Cl. 424-301.000.
Boehringer Mannheim GmbH: *See*—
Batz, Hans-Georg; Draeger, Brigitte; Wahlefeld, August W.; Weimann, Gunter; and Gruber, Wolfgang, 4,184,848, Cl. 23-230.00B.
Carstensen, Carsten A., 4,185,085, Cl. 424-3.000.
Roeschlau, Peter; Bernt, Erich; and Gruber, Wolfgang, 4,184,921, Cl. 435-11.000.
Boeing Company, The: *See*—
Benson, Richard L.; Hill, Horace E.; and Soderberg, Mark S., 4,184,692, Cl. 279-75.000.
Wakeley, Tendon, 4,184,656, Cl. 244-118.600.
Boeniger, Regula: *See*—
Krasnobajew, Victor; and Boeniger, Regula, 4,184,986, Cl. 260-6.000.
Bogese, Stephen B., II, to Virginia Plastics Company. Multi-conductor EMF controlled flat transmission cable. 4,185,162, Cl. 174-32.000.
Boileau, Jacques, to Compagnie Generale des Etablissements Michelin. Tire having a tread reinforcement. 4,184,529, Cl. 152-361.0FP.
Boitz, Robert R. Flexible pipe vice for use with a ladder. 4,184,666, Cl. 269-98.000.
Bonney, Roland W. Multiple three and/or two way valve. 4,184,513, Cl. 137-596.120.
Bonzo, Roy T., to Corning Glass Works. Spool for filament winder. 4,184,653, Cl. 242-125.100.
Borg-Warner Corporation: *See*—
Fogelberg, Mark J., 4,184,575, Cl. 192-36.000.
Borjesson, Anders; and Narbro, Alf, deceased (by Narbro, Karin G. E., Lennart Narbro, and Anna K. K. Narbro, legal representatives), to Aktiebolaget Tudor. Methods and apparatus for producing electrical batteries. 4,184,582, Cl. 198-339.000.
Bosc, Henri J., to International Standard Electric Corporation. Radar for the detection of fixed targets in clutter. 4,185,285, Cl. 343-5.0SA.
Boshilov, Grozdan T.: *See*—
Stoev, Stoycho M.; Mitrushev, Marin D.; Boshilov, Grozdan T.; and Radeva, Maria G., 4,184,965, Cl. 210-388.000.
Bosshard, Hans: *See*—
Eichenberger, Kurt; Bosshard, Hans; Buhler, Niklaus; Goschke, Richard; and Jaeggi, Knut A., 4,185,110, Cl. 424-275.000.
Botsch, Bertram. Screening apparatus for removing coarse material from fluids including a screen cleaner. 4,184,957, Cl. 210-155.000.
Bottard, Gilles J. M.; and Henry, Michel, to Compagnie Internationale pour L'Informatique, CII-Honeywell Bull (Societe Anonyme). Data accumulation and compression apparatus. 4,185,190, Cl. 235-304.000.
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, to Rhone-Poulenc Industries. Medicaments containing a thiazoline derivative. 4,185,107, Cl. 424-263.000.
Bowman, J. Robert, to Globe Manufacturing Co. Lift-front firefighter's hood. 4,184,212, Cl. 2-5.000.
Bowmar Instrument Corporation: *See*—
Sigl, Edward D., 4,185,188, Cl. 235-139.00A.
Boyer, Scott M.; Dawson, Chris R.; French, Charles S.; Morgan, Clyde R.; and Grabos, Fred F., Jr., to Scott USA, Inc. Boot with hinged upper. 4,184,273, Cl. 36-131.000.
Brachet, Roland. Apparatus for measuring the density of a body. 4,184,371, Cl. 73-433.000.
Bradley, Edward T., to M&T Chemicals Inc. Jet printing ink composition containing an ethylene oxide adduct of acetylenic diol. 4,184,881, Cl. 106-20.000.
Braun, Daniel J.: *See*—
Smith, Gregory C.; Tokarz, Richard D.; Parry, Harvey L., Jr.; and Braun, Daniel J., 4,184,536, Cl. 165-1.000.
Braun, Erwin; and Bock, Erich, to Schubert & Salzer. Apparatus for supplying compressed air in arresting the rotor of an open end spinning device. 4,184,315, Cl. 57-89.000.
Breault, Richard D., to United Technologies Corporation. Fuel cell electrolyte reservoir layer and method for making. 4,185,145, Cl. 429-34.000.
Breitbarth, Michael D., to ESCO Corporation. Machine for shaping sand into cores or molds. 4,184,533, Cl. 164-181.000.
Brett, Hans: *See*—
Rapp, Karl; Brett, Hans; Tyrolt, Alex; and Stabentheiner, Gabriel, 4,184,816, Cl. 417-499.000.
Breuers, Theo P. C., to Oce-van der Grinten N.V. Copying apparatus with device for transporting sheetlike originals yet covering various originals for exposure. 4,184,765, Cl. 355-75.000.
Bricker, Jack E.; Galmiche, Rene G.; and Pottorff, Donald R., to Walter Kidde & Company, Inc. Double-acting disc brake having floating cylinder head. 4,184,573, Cl. 188-170.000.
Bristol-Myers Company: *See*—
Sleezer, Paul D.; and Johnson, David A., 4,185,015, Cl. 260-239.100.

British Petroleum Company Limited, The: *See—*
Allinson, David J. S.; and Mitchell, Robert W., 4,184,953, Cl. 210-82.000.
Crump, Ronald A., 4,185,094, Cl. 424-172.000.

Brockman, Helen L., to Kansas State University Research Foundation. Pattern fitting system and method. 4,184,260, Cl. 33-15.000.

Brodell, Robert F.; Johnson, Robert A.; and Holmes, Trent H., to United Technologies Corporation. Seal structure for an axial flow rotary machine. 4,184,689, Cl. 277-26.000.

Broijl, Berend; and vanderPlas, Nicolaas. Agricultural implement comprising rotatable working members and an improved supporting member for the same. 4,184,313, Cl. 56-370.000.

Bronner, Jean-Jacques: *See—*
Beyhurst, Desire; Bronner, Jean-Jacques; Fuhrer, Jean-Claude; and Kraess, Henri, 4,185,174, Cl. 179-175.20R.

Brooks, Burton; and Brooks, Richard J., to Chemithon Corporation, The. Sulfonating method. 4,185,030, Cl. 260-458.00R.

Brooks, Richard J.: *See—*
Brooks, Burton; and Brooks, Richard J., 4,185,030, Cl. 260-458.00R.

Brouhard, Wayne R., Jr. Agitator. 4,184,777, Cl. 366-211.000.

Brown, Jack; Coughenour, Donald J.; and Pepe, Russell J., to Singer Company, The. Electronically controlled household sewing machine having patch sewing capability. 4,184,441, Cl. 112-158.00E.

Brown, Jack; Herr, John A.; Jaffe, Wolfgang; and Peterson, Wesley R., to Singer Company, The. Diaphragm pump for needle threading. 4,184,443, Cl. 112-225.000.

Brown, Jack M., to B and W Engineering Services. Particle detection system and apparatus therefor. 4,184,372, Cl. 73-572.000.

Brown, John E., to West & Son (Engineers) Limited. Annular elements. 4,184,690, Cl. 277-102.000.

Brown, Kenneth H., to Motorola Inc. Method and apparatus for providing a standby signal. 4,185,243, Cl. 325-364.000.

Brown, Thomas H.; and Ife, Robert J., to Smith Kline & French Laboratories Limited. Pharmacologically active triazinones. 4,185,103, Cl. 424-249.000.

Brown, William C., Jr.; Crete, Paul G.; Sullivan, Philip L.; and Williamson, James, to Raytheon Company. Compensated automatic gain control. 4,185,251, Cl. 330-279.000.

Browning-Ferris Industries of Ohio and Michigan, Inc.: *See—*
Yeager, David M.; and Thumm, Hans T., 4,184,424, Cl. 100-99.000.

Brumbach, Joseph F.: *See—*
Murry, Edward J.; and Brumbach, Joseph F., 4,184,510, Cl. 137-565.000.

Brunswick Corporation: *See—*
Hale, David J., 4,184,462, Cl. 123-55.0VS.

Bryers, Richard W.; and Taylor, Thomas E., to Foster Wheeler Development Corporation. Fluidized bed start-up apparatus. 4,184,438, Cl. 110-263.000.

Bryers, Richard W.: *See—*
Taylor, Thomas E.; and Bryers, Richard W., 4,184,456, Cl. 122-4.00D.

Bubley, Henry J.; Lala, Louis A.; and Taylor, Hillman W., to American Screen Printing Equipment Co. Multi-purpose screen printing machine for flat or curved surfaces. 4,184,427, Cl. 101-123.000.

Buchan, Walter; Kropa, Gomer E.; and Winiarski, Edward J., to Leesona Corporation. Pelletizing apparatus. 4,184,833, Cl. 425-311.000.

Buckner, Ian W.: *See—*
Wren, John P.; and Buckner, Ian W., 4,184,687, Cl. 274-13.00R.

Buerner, Wolfgang P., to Los Angeles Scientific Instrument Co., Inc. Multipurpose drafting and measuring instrument. 4,184,261, Cl. 33-18.00R.

Buhler, Niklaus: *See—*
Eichenberger, Kurt; Bosshard, Hans; Buhler, Niklaus; Goschke, Richard; and Jaeggi, Knut A., 4,185,110, Cl. 424-275.000.

Buning, Robert; Blaschke, Franz; and Trautvetter, Werner, to Dynamit Nobel Aktiengesellschaft. Polyvinyl chloride of high impact strength prepared on the basis of ethylene-vinyl acetate or ethylene-alkylacrylate copolymers. 4,185,048, Cl. 525-80.000.

Bunker Ramo Corporation: *See—*
Kaczmarek, Leonard J., 4,184,244, Cl. 29-566.300.
Parks, Howard L.; and Kuronen, John M., 4,184,729, Cl. 339-17.00F.
Spaulding, Tedford H., 4,184,736, Cl. 339-258.00R.

Burd, Samuel, to Cordis Dow Corp. Infusion tube access site. 4,184,489, Cl. 128-214.00R.

Burgess, David E.; and Masters, Darrell J. Image projection systems. 4,184,755, Cl. 353-45.000.

Burke, Earl S., to General Tire & Rubber Company, The. Polyurethane binder composition containing a rubber extender oil and a finely divided solid soybean derivative. 4,185,146, Cl. 521-99.000.

Burkey, David J.; Clark, Lawrence; George, Jay R.; and Long, Harry F., to Armstrong Cork Company. Electroforming mandrel. 4,184,940, Cl. 204-281.000.

Burnham, Robert D.: *See—*
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,185,256, Cl. 331-94.50H.

Burns, Kenneth L.; Smith, Raymond E.; and Doughdrill, Don J., to Loffland Brothers Company. Igniter for oil and/or gas well drilling operation. 4,184,838, Cl. 431-202.000.

Burroughs Corporation: *See—*
Gyi, Ko Ko; and Ragle, Herbert U., 4,185,311, Cl. 360-99.000.

Burrows, Walter H., to Compac Industries, Inc. Soil moisture signaling device. 4,184,445, Cl. 116-206.000.

Burton, George: *See—*
Taylor, Andrew W.; Burton, George; and Clayton, John P., 4,185,014, Cl. 260-239.100.

Butler, Frederick R. Coin testing apparatus. 4,184,366, Cl. 73-163.000.

Butseniex, Imant E.; Levina, Margarita Y.; Prostyakov, Alexandr A.; Stolov, Mikhail Y.; Sharamkin, Vladimir I.; and Scherbinin, Eduard V. Method for melting metals in a channel-type induction furnace. 4,185,159, Cl. 13-29.000.

Butwell, Kenneth F.; and Kubek, Daniel J., to Union Carbide Corporation. Process for CO_2 removal. 4,184,855, Cl. 55-48.000.

Buzzell, John E.; and Willens, Robert. Insect control collar with replaceable chemical member. 4,184,452, Cl. 119-106.000.

Byrne, Irvin J. Wave motor tank. 4,184,335, Cl. 60-496.000.

Byrne, Michael, to General Electric Company. Ionization smoke detector having improved stability and sensitivity. 4,185,196, Cl. 250-381.000.

Byrne, Michael, to General Electric Company. Arrangement for inhibiting the effect of extraneous electric fields on an improved ionization smoke detector. 4,185,197, Cl. 250-381.000.

C.G.R. MeV, Inc.: *See—*
Azam, Guy; Bensussan, Andre; Levaillant, Claude; Huber, Harry; Mevel, Emile; and Tronc, Dominique, 4,184,956, Cl. 210-103.000.

C. J. Patterson Company: *See—*
France, James R.; Baiocchi, Fred; and Concar, George A., 4,184,978, Cl. 252-309.000.

C. P. Hall Company, The: *See—*
Kuceski, Vincent P., 4,185,150, Cl. 528-336.000.

Caldwell, Bessie L.: *See—*
Hinchman, Leslie R.; and Hinchman, Robert B., 4,184,409, Cl. 91-347.000.

Caldwell, Richard L., to Mobil Oil Corporation. Method for assaying for neutron-fission-producing ores. 4,185,193, Cl. 250-269.000.

Calgon Corporation: *See—*
Sinha, Rabindra K., 4,185,082, Cl. 423-437.000.

Calundann, Gordon W., to Celanese Corporation. Melt processable thermotropic wholly aromatic polyester. 4,184,996, Cl. 260-40.00R.

Cambiaso, Cesar L.; de Steenwinkel, Floris; Leek, Adrian E.; and Masson, Pierre L., to Technicon Instruments Corporation. Mixed agglutination. 4,184,849, Cl. 23-230.00B.

Campbell Soup Company: *See—*
Gilde, Louis C., Jr., 4,184,789, Cl. 405-36.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Smith, Donald L.; and Clark, Michael N., 4,184,408, Cl. 89-1.806.

Canadian Mine Services Limited: *See—*
Crawshay, Richard; and Rowswell, Malcolm D., 4,184,581, Cl. 198-308.000.

Canon Kabushiki Kaisha: *See—*
Ito, Fumio; and Yazaki, Mutsunobu, 4,184,759, Cl. 354-86.000.
Kuge, Tsukasa; Matsumoto, Toru; Watanabe, Tsuyoshi; and Tamura, Yasuyuki, 4,185,129, Cl. 430-120.000.

Canron, Inc.: *See—*
Goel, Pierre, 4,184,431, Cl. 104-2.000.
Hurni, Hans, 4,184,266, Cl. 33-287.000.

Carbrey, Robert L., to Bell Telephone Laboratories, Incorporated. Capacitive analog to digital converter. 4,185,275, Cl. 340-347.0AD.

Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Continuous process for ozonizing unsaturated compounds. 4,185,025, Cl. 260-406.000.

Carey, Lee F., to Textron Inc. Method of making an extendible/expandable nozzle for rocket engines. 4,184,238, Cl. 29-157.00C.

Carl Freudenberg, Firma: *See—*
Eckmayer, Zdenek; Berg, Alexander; and Kuhn, Joachim, 4,185,011, Cl. 260-123.700.

Carlin, Milton O. Restraining device for animal surgery. 4,184,451, Cl. 119-103.000.

Carlin, William W., to PPG Industries, Inc. Catalytic electrode. 4,184,941, Cl. 204-292.000.

Carlock, John T., to Conoco, Inc. Hydroformylation catalysts containing rhodium (I) or iridium (I) chemically bound directly to inorganic polymers. 4,185,038, Cl. 260-604.0HF.

Carmichael, James T.; Diehl, Robert J.; and Godare, William L., to W-K-M Wellhead Systems, Inc. Wellhead valve removal and installation tool. 4,184,504, Cl. 137-15.000.

Carnes, Allen R.; and Mann, Douglas D. Preparation and method for treatment of hypocalcemia, hypophosphatemia and downer cow syndrome in animals. 4,185,093, Cl. 424-153.000.

Carrigan, David B.; and Freas, Roy W., to David Carrigan and Associates, Inc. Apparatus for dispensing, filling and capping a plurality of cups. 4,184,523, Cl. 141-238.000.

Carstensen, Carsten A., to Boehringer Mannheim GmbH. Differential diagnostic sperm examination. 4,185,085, Cl. 424-3.000.

Carver, Edgar B.: *See—*
Sioui, Richard H.; and Carver, Edgar B., 4,184,854, Cl. 51-298.000.

Casamayor, Jorge, to Plaskolite, Inc. Extruded plastic panel holding and jointing strips and window assemblies therewith. 4,184,297, Cl. 52-202.000.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 4,184,320, Cl. 58-74.000.

Casmer, Charles J.: *See—*
Draper, Richard W.; Green, Michael J.; and Casmer, Charles J., 4,185,101, Cl. 424-243.000.

Caspari, Gunter; and Poppe, Wassily, to Standard Oil Company (Indiana). Flame retardant compositions. 4,185,008, Cl. 260-45.80A.

Cassella Aktiengesellschaft: *See*—
Piesch, Steffen; and Wille, Herbert, 4,185,017, Cl. 260-239.30R.
Casson, M. E.; Moore, Albert E.; and Berry, George J., Sr., to Extracorporeal Medical Specialties, Inc. Roller pump rotor with integral spring arms. 4,184,815, Cl. 417-477.000.
Castro, Bertrand; Menard, Joel; Evin, Genevieve; and Corvol, Pierre, to Agence Nationale de Valorisation de la Recherche (ANVAR). Novel derivatives of pepstatin, their preparation and compositions containing them. 4,185,096, Cl. 424-177.000.
Catalyst Research Corporation: *See*—
Tataria, Harshad; Schneider, Alan A.; Travers, William A., Jr.; and Martin, Lee E., 4,184,937, Cl. 204-195.00R.
Caterpillar Tractor Co.: *See*—
Cobb, Delwin E., 4,184,808, Cl. 417-348.000.
Johnson, Howard L., 4,184,410, Cl. 91-421.000.
Causey, G. Donald: *See*—
Graupe, Daniel; and Causey, G. Donald, 4,185,168, Cl. 179-1.00P.
Celanese Corporation: *See*—
Calundann, Gordon W., 4,184,996, Cl. 260-40.00R.
Lazear, Nelson R.; and Stackman, Robert W., 4,185,050, Cl. 525-221.000.
Vanderspurt, Thomas H., 4,184,981, Cl. 252-437.000.
Centre National pour l'Exploitation des Oceans: *See*—
Gauthier, Michel; Le Foll, Francois; and Charles, Christian, 4,184,583, Cl. 198-703.000.
Champion Spark Plug Company: *See*—
Hinton, Jonathan W., 4,185,061, Cl. 264-65.000.
Chancellor, Richard A., to Ford Motor Company. Plume elimination mechanism. 4,184,417, Cl. 98-58.000.
Chang, Kenneth; Cosman, David C.; Gartner, Helmut M.; and Hoeg, Anthony J., Jr., to International Business Machines Corporation. Method of forming thin film interconnection systems. 4,184,909, Cl. 156-643.000.
Chapin, James R., to General Electric Company. Locomotive with large crew cab. 4,184,434, Cl. 105-456.000.
Charles, Christian: *See*—
Gauthier, Michel; Le Foll, Francois; and Charles, Christian, 4,184,583, Cl. 198-703.000.
Charlotte Pipe and Foundry Company: *See*—
Barber, Jasper D., 4,184,834, Cl. 425-548.000.
Chastain, David: *See*—
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; and Chastain, David, 4,185,310, Cl. 360-97.000.
Chatinian, Jury S.: *See*—
Pevzner, Lev V.; Ustkachkintsev, Alexandr N.; Yakobson, Boris V.; Timofeev, Andrei V.; Furman, Anna A.; Vaskanov, Sergei E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M., 4,184,972, Cl. 252-62.540.
Chattanooga Pharmacal Company: *See*—
Sauder, James W., 4,184,537, Cl. 165-46.000.
Cheasick, Robert C.: *See*—
Nelson, Norman E.; and Cheasick, Robert C., 4,184,650, Cl. 242-71.800.
Chedid, Louis: *See*—
Derrien, Marcel; Lederer, Edgar; Audibert, Francoise M.; Chedid, Louis; Choay, Jean; and Lefrancier, Pierre, 4,185,089, Cl. 424-88.000.
Chemithon Corporation, The: *See*—
Brooks, Burton; and Brooks, Richard J., 4,185,030, Cl. 260-458.00R.
Chemoprojekt, projektova, inzenyrska a konzultacni organizace: *See*—
Polak, Josef, 4,184,938, Cl. 204-196.000.
Chemplex Company: *See*—
Kirch, William; and Thompson, Paul A., 4,184,979, Cl. 252-430.000.
MacAdams, John L.; Wu, William C. L.; and Joyner, Richard S., 4,185,067, Cl. 264-310.000.
Chepregi, Alan: *See*—
Watson, James M.; and Chepregi, Alan, 4,185,019, Cl. 260-340.700.
Choay, Jean: *See*—
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Chrastina, William, to United States of America, Navy. Wire guide and method for preconditioning bouyant electrodes. 4,185,264, Cl. 340-852.000.
Christensson, Od W. Lined container, especially for compressed and/or evacuated goods. 4,184,608, Cl. 220-404.000.
Christin, Alan; and Zembrot, Anton, to Escher Wyss GmbH. Dryer drum for a paper making machine. 4,184,268, Cl. 34-124.000.
Chute, Challoner R. Shaping and stretching aqueous formic acid solutions of polypyrrolidone, filament and film products. 4,185,063, Cl. 264-210.000.
Ciba-Geigy AG: *See*—
Maternaghan, Trevor J., 4,184,877, Cl. 430-567.000.
Ciba-Geigy Aktiengesellschaft: *See*—
Maternaghan, Trevor J., 4,184,878, Cl. 430-567.000.
Ciba-Geigy Corporation: *See*—
Eichenberger, Kurt; Bosshard, Hans; Buhler, Niklaus; Goschke, Richard; and Jaeggi, Knut A., 4,185,110, Cl. 424-275.000.
Fah, Hansjakob, 4,185,018, Cl. 548-126.000.
Knusel, Fritz; Nuesch, Jakob; Peter, Heinrich; and Rosselet, Armel, 4,185,091, Cl. 424-118.000.
Nachbur, Hermann; and Maeder, Arthur, 4,185,037, Cl. 260-583.00E.
Rasberger, Michael; and Spivack, John D., 4,185,006, Cl. 260-45.80N.
Rasberger, Michael; and Karrer, Friedrich, 4,185,007, Cl. 260-45.80N.
Rosen, Melvin H., 4,185,109, Cl. 424-275.000.
Cincinnati Electronics Corporation: *See*—
Griffin, Noel J.; Miller, Larry D.; Squire, Gerald K.; and Knochelmann, Carl E., Jr., 4,185,265, Cl. 340-32.000.
Citizen Watch Co., Ltd.: *See*—
Kanda, Nobuyuki; and Kamiyama, Yasuo, 4,184,317, Cl. 58-90.00R.
Kurihara, Toshio; Mizutani, Nagao; and Ohkawara, Yasuo, 4,184,780, Cl. 400-56.000.
Clark, Douglas S.: *See*—
Wenger, La Von G.; Clark, Douglas S.; and Hauck, Bobbie W., 4,185,123, Cl. 426-272.000.
Clark, Lawrence: *See*—
Burkey, David J.; Clark, Lawrence; George, Jay R.; and Long, Harry F., 4,184,940, Cl. 204-281.000.
Clark, Lloyd D. Multiple character word indication system employing sequential sensible indicia. 4,185,283, Cl. 340-802.000.
Clark, Melvin D., to Aro Corporation, The. Secondary speed sensor for governed air grinders. 4,184,819, Cl. 418-43.000.
Clark, Michael N.: *See*—
Smith, Donald L.; and Clark, Michael N., 4,184,408, Cl. 89-1.806.
Clark, Thomas G.: *See*—
Rabelos, Nicholas A., 4,184,567, Cl. 182-5.000.
Clary, Kenneth B.: *See*—
Rabelos, Nicholas A., 4,184,567, Cl. 182-5.000.
Claudius Peters, AG.: *See*—
Krauss, Werner, 4,184,774, Cl. 366-107.000.
Clauss, Richard J.: *See*—
Tomaszewski, Thaddeus W.; Creutz, Hans-Gerhard, deceased; and Clauss, Richard J., 4,184,929, Cl. 204-51.000.
Clawson, Roger B. Method of working an adjustable sprinkler head. 4,184,239, Cl. 29-157.00C.
Claycomb, Jack R. Measuring and transmitting apparatus for use in a drill string. 4,184,545, Cl. 166-113.000.
Clayton, John P.: *See*—
Taylor, Andrew W.; Burton, George; and Clayton, John P., 4,185,014, Cl. 260-239.100.
Clear Pine Mouldings, Inc.: *See*—
Louderback, Lauren G., 4,184,449, Cl. 118-63.000.
Cleveland, J. B. Apparatus for randomly coloring textile yarns in a batch system. 4,184,348, Cl. 68-188.000.
Clifford, Susan E.: *See*—
Wright, Ballard D.; and Clifford, Susan E., 4,184,484, Cl. 128-748.000.
Cline, Harvey E.: *See*—
Anthony, Thomas R.; and Cline, Harvey E., 4,184,897, Cl. 148-1.500.
Coale, Edgar B. Transmissive diffractive phase-grating. 4,184,746, Cl. 350-162.00R.
Cobb, Delwin E., to Caterpillar Tractor Co. Fluid driven pump. 4,184,808, Cl. 417-348.000.
Coggiola, Marcel, to Societe Industrielle et Forestiere des Allumettes. Safety device for domestic appliances. 4,184,641, Cl. 241-37.500.
Cohen, Eli. Solar energy collecting system. 4,184,482, Cl. 126-438.000.
Cohen, Stuart C., to General Electric Company. Thermoplastic molding compositions. 4,185,047, Cl. 525-94.000.
Colgate-Palmolive Company: *See*—
Karami, Hamzeh, 4,184,902, Cl. 156-85.000.
Colle, Ervin R., to Raymond International, Inc. Form for erosion control structures. 4,184,788, Cl. 405-19.000.
Collins, James; and Gerstenbacher, Joseph. Game projectile. 4,184,682, Cl. 273-106.00B.
Colliton, Walter A., to General Electric Company. High efficiency ballast system for gaseous discharge lamps. 4,185,231, Cl. 315-189.000.
Colombo, Michael: *See*—
Kondo, Dennis; and Colombo, Michael, 4,185,175, Cl. 179-182.00R.
Combustion Engineering, Inc.: *See*—
Manning, William P., 4,184,837, Cl. 431-90.000.
Comerford, John; and Lauritsen, Richard L., to Singer Company, The. Switch and cable actuator. 4,184,381, Cl. 74-471.0XY.
Commisariat a l'Energie Atomique: *See*—
Ouriet, Jean P.; Recule, Albert; and Roll, Georges, 4,184,664, Cl. 254-50.200.
Commissariat a l'Energie Atomique: *See*—
Prinz, Michel, 4,184,806, Cl. 417-160.000.
Compac Industries, Inc.: *See*—
Burrows, Walter H., 4,184,445, Cl. 116-206.000.
Compagnie Generale d'Electricite: *See*—
Appleby, Anthony-John; and Crepy, Gilles, 4,184,930, Cl. 204-96.000.
Compagnie Generale des Etablissements Michelin: *See*—
Boileau, Jacques, 4,184,529, Cl. 152-361.0FP.
Compagnie Industrielle des Telecommunications Cit-Alcatel S.A.: *See*—
Billet, Gilles; and Blottiau, Jean, 4,185,298, Cl. 358-106.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull: *See*—
Lazzari, Jean-Pierre, 4,184,631, Cl. 235-449.000.
Compagnie Internationale pour L'Informatique, CII-Honeywell Bull (Societe Anonyme): *See*—
Bottard, Gilles J. M.; and Henry, Michel, 4,185,190, Cl. 235-304.000.

Concar, George A.: *See—*
France, James R.; Baiocchi, Fred; and Concar, George A., 4,184,978, Cl. 252-309.000.

Concrete Industries (Monier) Limited: *See—*
Dimmock, Eric P.; and Spurrier, Leslie P., 4,184,586, Cl. 198-726.000.

Conoco, Inc.: *See—*
Carlock, John T., 4,185,038, Cl. 260-604.0HF.
Jones, Emrys H., Jr.; and Miller, Thomas R., 4,184,553, Cl. 175-61.000.

Conrow, Ransom B.: *See—*
Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,185,032, Cl. 260-506.000.
Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,185,033, Cl. 260-506.000.

Continental Group, Inc., The: *See—*
Khoury, Nick S., 4,184,606, Cl. 220-270.000.

Cook, Richard J.; and Reade, Richard, to Mid-Continent Aircraft Corporation. Front loader vehicle for loading aircraft. 4,184,802, Cl. 414-680.000.

Copal Company Limited: *See—*
Tsuchiya, Tsuyoshi, 4,184,318, Cl. 58-23.0BA.

Corby, Karl W.; Ogden, William H., III; and London, Harold. Live bait well. 4,184,281, Cl. 43-57.000.

Cordis Dow Corp.: *See—*
Burd, Samuel, 4,184,489, Cl. 128-214.00R.

Corey, Kenneth J., to Lewis, Donald J. Locked lined pipe and method for making same. 4,184,517, Cl. 138-147.000.

Corley, Ralph C.: *See—*
Cornett, Jack E.; Corley, Ralph C.; Fraley, Thomas O.; and Saunders, Andrew A., Jr., 4,184,327, Cl. 60-240.000.

Corman, Edward M.: *See—*
Balzer, Claude P.; and Corman, Edward M., 4,184,298, Cl. 52-396.000.

Cornett, Jack E.; Corley, Ralph C.; Fraley, Thomas O.; and Saunders, Andrew A., Jr., to United States of America, National Aeronautics and Space Administration. Method and apparatus for rapid thrust increases in a turbofan engine. 4,184,327, Cl. 60-240.000.

Corning Glass Works: *See—*
Bonzo, Roy T., 4,184,653, Cl. 242-125.100.
Hawk, Robert M.; and Wey, Robert A., 4,184,741, Cl. 350-96.200.
Kenny, Neal S., 4,184,480, Cl. 126-450.000.

Corrales, Patrick G., to International Telephone and Telegraph Corporation. Hermaphroditic fiber optic connector. 4,184,742, Cl. 350-96.210.

Corso, Philip P. Trip alarm circuit. 4,185,277, Cl. 340-508.000.

Corvol, Pierre: *See—*
Castro, Bertrand; Menard, Joel; Evin, Genevieve; and Corvol, Pierre, 4,185,096, Cl. 424-177.000.

Cosman, David C.: *See—*
Chang, Kenneth; Cosman, David C.; Gartner, Helmut M.; and Hoeg, Anthony J., Jr., 4,184,909, Cl. 156-643.000.

Cossaboon, Karl F., to Du Pont de Nemours, E. I., and Company. Hydrogenation of mixed aromatic nitrobodies. 4,185,036, Cl. 260-580.000.

Cote, Maurice; and Bauman, Ralph E., to Sanders Associates, Inc. Broadband high power bias circuit. 4,185,258, Cl. 333-262.000.

Cotton Machinery Company, Inc.: *See—*
Haney, Donald J.; and Orlando, Franklin P., 4,184,425, Cl. 100-100.000.

Coughenour, Donald J.: *See—*
Brown, Jack; Coughenour, Donald J.; and Pepe, Russell J., 4,184,441, Cl. 112-158.00E.

Coulter Electronics, Inc.: *See—*
Hogg, Walter R., 4,184,766, Cl. 356-72.000.

Counsilman, James E.: *See—*
Flavell, Evan R.; and Counsilman, James E., 4,184,678, Cl. 272-129.000.

Courtois, Bernard, to Societe Industrielle Bertrand Faure. Reclining seat back hinge. 4,184,714, Cl. 297-370.000.

Cowlin, Robert M.; Long, Peter G.; Sapsed, Leslie F.; and Steward, John F., to Lockwood Graders (UK) Limited. Manually operated position detector for a conveyor article sorter. 4,184,598, Cl. 209-705.000.

Cox, Roger F., to Norlin Industries, Inc. Reversible mounting bracket. 4,184,726, Cl. 312-320.000.

Coyle, Thomas M. Conduit cleaner. 4,184,220, Cl. 15-104.200.

Cramer, Lyle L. Card game board apparatus. 4,184,684, Cl. 273-148.00A.

Crawshay, Richard; and Rowswell, Malcolm D., to Canadian Mine Services Limited; and Kerr Addison Mines Ltd. Loading apparatus for mines. 4,184,581, Cl. 198-308.000.

Crepy, Gilles: *See—*
Appleby, Anthony-John; and Crepy, Gilles, 4,184,930, Cl. 204-96.000.

Crete, Paul G.: *See—*
Brown, William C., Jr.; Crete, Paul G.; Sullivan, Philip L.; and Williamson, James, 4,185,251, Cl. 330-279.000.

Creusot-Loire-Vallourec: *See—*
Peytavin, Pierre, 4,184,534, Cl. 164-269.000.

Creutz, Hans-Gerhard, deceased: *See—*
Tomaszewski, Thaddeus W.; Creutz, Hans-Gerhard, deceased; and Clauss, Richard J., 4,184,929, Cl. 204-51.000.

Creutz, Katharina A., administratrix: *See—*
Tomaszewski, Thaddeus W.; Creutz, Hans-Gerhard, deceased; and Clauss, Richard J., 4,184,929, Cl. 204-51.000.

Crichton, George: *See—*
Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., 4,185,075, Cl. 422-191.000.

Cross, Peter E.: *See—*
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,185,116, Cl. 424-319.000.
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,185,117, Cl. 424-324.000.

Crown Cork & Seal Company, Inc.: *See—*
Potts, Vinson S., 4,184,607, Cl. 220-273.000.

Crown Zellerbach Corporation: *See—*
Stollberg, Ray H.; Johnson, Wendell J.; and Welch, Richard O., 4,184,625, Cl. 229-23.0BT.

Crump, Ronald A., to British Petroleum Company Limited, The. Biocidal composition. 4,185,094, Cl. 424-172.000.

Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
De Micheli, Spiridione, 4,185,189, Cl. 235-304.000.
Melindo, Flavio; and Rocci, Renato, 4,185,172, Cl. 179-15.0BY.

Cuff, David W., to Leesona Corporation. Die construction. 4,184,832, Cl. 425-308.000.

Cunningham, Donald R.; and Sulewsky, James E., to Acoustical Design Incorporated. Sound masking package. 4,185,167, Cl. 179-1.0AA.

Cuntze, Ulrich; Raether, Wolfgang; Reul, Bernhard; and Ross, Gerhard, to Hoechst Aktiengesellschaft. Disinfectant. 4,185,098, Cl. 424-199.000.

Curran, Patrick M.: *See—*
Erickson, John S.; Thompson, Earl R.; and Curran, Patrick M., 4,184,900, Cl. 148-32.000.

Cutler, Jerome J., to Sims, Ernest J., Jr.; Goodman, Nathan M., custodian for Michelle B. and Michael W. Goodman; Tottle, Milton; Rosenbloom, Howard; and Mooney, Robert. Coupling for disconnecting a motor drive and driven accessory. 4,184,345, Cl. 64-28.00R.

Dabby, Sabah S.; and Zaganiaris, Emannuel J., to Rohm and Haas Company. Water softening method using thermally regenerable ion exchange resin. 4,184,948, Cl. 210-25.000.

Dai Nippon Printing Co. Ltd.: *See—*
Noshiro, Atsumi; Takamizawa, Minoru; and Inoue, Yoshio, 4,184,873, Cl. 430-258.000.

Daimler-Benz Aktiengesellschaft: *See—*
Forster, Hans-Joachim M., 4,184,386, Cl. 74-688.000.

Danfoss A/S: *See—*
Dyhr, Jan; Karll, Bent; and Andersen, Hans C., 4,184,810, Cl. 417-363.000.

Danielson, Carl Viktor: *See—*
Baumann, Hans, 4,184,843, Cl. 8-10.100.

Danielsson, Kurt L., to Morgardshammar Aktiebolag. Rotatable roller arrangement. 4,184,723, Cl. 308-190.000.

Danilewicz, John C.: *See—*
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,185,116, Cl. 424-319.000.
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,185,117, Cl. 424-324.000.

DAP Inc.: *See—*
Zoumut, Hani F., 4,184,888, Cl. 106-178.000.

Darling, David S.: *See—*
Spengler, Duane; and Darling, David S., 4,184,286, Cl. 46-205.000.

Das, Santanu: *See—*
Fellinger, Frank; and Das, Santanu, 4,185,245, Cl. 328-103.000.

Data General Corporation: *See—*
Feldstein, Michael; and Thackaberry, Harold, 4,185,309, Cl. 360-97.000.
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; and Chastain, David, 4,185,310, Cl. 360-97.000.

Datotek, Inc.: *See—*
Kinch, Frederick A., Jr.; and Morgan, Barrie O., 4,185,166, Cl. 178-22.000.

Daugherty, Lenn: *See—*
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; and Chastain, David, 4,185,310, Cl. 360-97.000.

d'Auria, Luigi; Jacques, Andre; and Dubos, Jacques, to Thomson-CSF. Brancher-mixer for bundles of optical fibres. 4,184,739, Cl. 350-96.150.

d'Auria, Luigi; Dubos, Jacques; and Jacques, Andre, to Thomson-CSF. Multi-channel coupler for fibres optic links. 4,184,740, Cl. 350-96.160.

Daveau, Bernard: *See—*
Drabowitch, Serge; and Daveau, Bernard, 4,185,286, Cl. 343-754.000.

David Carrigan and Associates, Inc.: *See—*
Carrigan, David B.; and Freas, Roy W., 4,184,523, Cl. 141-238.000.

Davis, Chester. Additive system of color photography based on iridescent pigments. 4,184,872, Cl. 43-365.000.

Davis, George B., Jr. Wire coat hanger attachment. 4,184,616, Cl. 223-98.000.

Dawson, Chris R.: *See—*
Boyer, Scott M.; Dawson, Chris R.; French, Charles S.; Morgan, Clyde R.; and Grabos, Fred F., Jr., 4,184,273, Cl. 36-131.000.

Day, Roger W., to Geosource Inc. Centrifugal mud mixer. 4,184,771, Cl. 366-3.000.

de la Merced, Joselito R. Game of mental addition using a die and a game board. 4,184,686, Cl. 273-274.000.

Dean, Robert E.; Maydan, Dan; Moran, Joseph M.; and Taylor, Gary N., to Bell Telephone Laboratories, Incorporated. X-ray lithography. 4,185,202, Cl. 250-492.00A.

de Buhr, Harold E.; Bass, Merlyn D.; and Grimstad, Ronald N., to Deere & Company. Support for a PTO hookup assembly. 4,184,558, Cl. 180-14.00R.

Deere & Company: *See*—
de Buhr, Harold E.; Bass, Merlyn D.; and Grimstad, Ronald N., 4,184,558, Cl. 180-14.00R.

DeFazio, August; and Kamen, Melvin E., to Revlon, Inc. Vacuum chuck. 4,184,292, Cl. 51-235.000.

Dehlen, Bengt L. A., to Trelleborgs Gummifabriks Aktiebolag. Bucket elevator. 4,184,584, Cl. 198-706.000.

Dellicolli, Humbert T.; and Dilling, Peter, to Westvaco Corporation. Sustained release pesticide compositions and process for making same. 4,184,866, Cl. 71-65.000.

del Soldato, Piero: *See*—
Meli, Alberto; Bianchini, Claudio; del Soldato, Piero; Ghelardoni, Mario; Pestellini, Vittorio; and Volterra, Giovanna, 4,185,124, Cl. 424-324.000.

De Micheli, Spiridione, to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A. Signal detector for monitoring electric circuits of a telecommunication system. 4,185,189, Cl. 235-304.000.

Demisch, Ronald R. Treatment of sewage effluent. 4,184,947, Cl. 210-18.000.

Dentaurum Hans-Peter Winkelstroeter KG: *See*—
Kraus, Hans J., 4,184,254, Cl. 433-17.000.

Derrien, Marcel; Lederer, Edgar; Audibert, Francoise M.; Chedid, Louis; Choay, Jean; and Lefrancier, Pierre, to Agence Nationale de Valorisation de la Recherche (ANVAR). Immunological adjuvant constituted by the p-amino-phenyl derivative of N-acetyl-muramyl-L-alanyl-D-isoglutamine. 4,185,089, Cl. 424-88.000.

DeSantis, Charles M.; and Schwering, Felix, to United States of America, Army. Spherical antennas having isotropic radiation patterns. 4,185,289, Cl. 343-770.000.

Deschamps, Leo F., to Kool-Ray Ltd. Decorative building panel. 4,184,300, Cl. 52-473.000.

de Steenwinkel, Floris: *See*—
Cambiaso, Cesar L.; de Steenwinkel, Floris; Leek, Adrian E.; and Masson, Pierre L., 4,184,849, Cl. 23-230.00B.

Detmer, Charles. Stirring device. 4,184,779, Cl. 366-282.000.

Detwiler, Richard H., to Noyes Tire Co. Method of making a flexible elastomeric matrix and method of retreading tires therewith. 4,185,056, Cl. 264-36.000.

DeVault, Robert T.: *See*—
Baker, Kenneth R.; and DeVault, Robert T., 4,184,566, Cl. 181-261.000.

Dews, George: *See*—
Goller, Glen J.; Petraglia, Vincent J.; and Dews, George, 4,185,131, Cl. 427-113.000.

Diamond Shamrock Corporation: *See*—
Solomon, Frank; Lieb, Donald F.; and LaBarre, Ronald L., 4,185,142, Cl. 429-49.000.

Dickey-john Corporation: *See*—
Bachman, Wesley J., 4,185,279, Cl. 340-671.000.

Diehl, Robert J.: *See*—
Carmichael, James T.; Diehl, Robert J.; and Godare, William L., 4,184,504, Cl. 137-15.000.

Diemolding Corporation: *See*—
Puderbaugh, George; Pike, Robert W.; Myers, Thomas S.; and Frakes, James H., Jr., 4,185,072, Cl. 422-99.000.

Dietrich, Walter: *See*—
Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Stephan, Herbert; and Stark, Friedrich, 4,184,448, Cl. 118-729.000.

Diggle, Edmund A., Jr., to Samcoe Holding Corporation. Method and apparatus for liquid processing of tubular knitted fabrics. 4,184,846, Cl. 8-149.100.

Dillard, Paul A.: *See*—
United States of America, National Aeronautics and Space Administration; Dillard, Paul A.; Fritz, Walter M.; and Lott, Dan R., 4,184,903, Cl. 156-104.000.

Dilling, Peter: *See*—
Dellicolli, Humbert T.; and Dilling, Peter, 4,184,866, Cl. 71-65.000.

Dimmock, Eric P.; and Spurrier, Leslie P., to Concrete Industries (Monier) Limited. Article translation apparatus. 4,184,586, Cl. 198-726.000.

Disteldorf, Josef: *See*—
Flakus, Werner; and Disteldorf, Josef, 4,184,989, Cl. 260-29.2TN.

Dittmar, Walter; Futterer, Eberhard; and Lohaus, Gerhard, to Hoechst Aktiengesellschaft. Pyridones as antidandruff agents. 4,185,106, Cl. 424-263.000.

Dizelny Zavod "Dvigatel Revoljutsii": *See*—
Petrovsky, Bogdan S.; Perlin, Samuil M.; Okunev, Anatoly A.; Nepomnyaschy, Lev I.; and Tepina, Nina I., 4,184,818, Cl. 417-569.000.

Dr. E. Fresenius Chemisch Pharmazeutische Industrie: *See*—
Schindler, Johannes G.; and Riemann, Werner, 4,184,935, Cl. 204-195.00F.

Doehler, Oskar F.; Espinosa, Robert J.; and Groshart, Gary G., to Northrop Corporation. Traveling wave tube. 4,185,225, Cl. 315-3.500.

Dohi, Kameo. Pinch-pointing machine. 4,184,217, Cl. 10-9.000.

Dohshita, Hidetoshi: *See*—
Ishii, Yoshiya; Dohshita, Hidetoshi; Yamamoto, Yoshihisa; and Okazaki, Hiroshi, 4,184,459, Cl. 123-32.0AE.

Doi, Shunichi: *See*—
Ogasawara, Takeo; and Doi, Shunichi, 4,184,638, Cl. 239-418.000.

Donahoe, Thomas M. Apparatus and method for assembling automotive gear reduction starter drive assembly. 4,184,240, Cl. 29-229.000.

Donaldson Company, Inc.: *See*—
Thomas, Timothy J.; and Manguson, Harold A., 4,184,376, Cl. 73-709.000.

Dorner, Friedrich; Scriba, Marianne; and Weil, Rudolf, to Sandoz Ltd. Process for producing a structurally modified interferon. 4,184,917, Cl. 435-68.000.

Dorr, Paul E. Package for disposable syringes. 4,184,593, Cl. 206-365.000.

Dosch, Thomas J.; McCoy, Rawley; and Steele, Theodore W., to Sierra Research Corporation. Mobile radar tower. 4,185,288, Cl. 343-765.000.

Doughdrill, Don J.: *See*—
Burns, Kenneth L.; Smith, Raymond E.; and Doughdrill, Don J., 4,184,838, Cl. 431-202.000.

Dow Chemical Company, The: *See*—
Ginter, Thomas O.; and Lalk, James W., 4,185,128, Cl. 427-390.00R.

Downing, Harvey T., to Rohm and Haas Company. Dual stroke drive mechanism for pumps. 4,184,383, Cl. 74-571.00R.

Drabowitch, Serge; and Daveau, Bernard, to Thomson-CSF. Nondispersive array antenna. 4,185,286, Cl. 343-754.000.

Draeger, Brigitte: *See*—
Batz, Hans-Georg; Draeger, Brigitte; Wahlefeld, August W.; Weimann, Gunter; and Gruber, Wolfgang, 4,184,848, Cl. 23-230.00B.

Drager, Axel: *See*—
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, 4,185,025, Cl. 260-406.000.

Drake, Leo O.; and Drake, Randall S. Printed circuit board storage device. 4,184,599, Cl. 211-41.000.

Drake, Randall S.: *See*—
Drake, Leo O.; and Drake, Randall S., 4,184,599, Cl. 211-41.000.

Draper, Ellsworth R., Jr., to Procter & Gamble Company, The. Antistatic, fabric-softening detergent additive. 4,184,970, Cl. 252-8.800.

Draper, Richard W.; Green, Michael J.; and Casmer, Charles J., to Schering Corporation. 1,3,5(10),6,8-19-Nor-pregnapentaenes, their use as anti-psoriatic agents, and pharmaceutical formulations useful therefor. 4,185,101, Cl. 424-243.000.

Drees, Anthony J. Control cover for power window or power door lock. 4,185,178, Cl. 200-42.00T.

Dresser Industries, Inc.: *See*—
Parker, Curtis J.; and McGill, Kenneth H., 4,184,814, Cl. 417-454.000.

Drillick, Jacob H., to Drillick-LaManna Corporation. Paper tape punch and reader. 4,184,629, Cl. 234-115.000.

Drillick-LaManna Corporation: *See*—
Drillick, Jacob H., 4,184,629, Cl. 234-115.000.

Droll, Gunter, Jr.: *See*—
Handrick, Kurt; Kolling, Georg; Linden, Clemens; and Droll, Gunter, Jr., 4,185,023, Cl. 260-369.000.

Droullard, Robert F.; and Holub, Robert F., to United States of America, Interior. Method of continuously determining radiation working level exposure. 4,185,199, Cl. 250-435.000.

Du Bae, Hyung, to International Telephone and Telegraph Corporation. Viscosimeter. 4,184,364, Cl. 73-54.000.

Dubos, Jacques: *See*—
d'Auria, Luigi; Jacques, Andre; and Dubos, Jacques, 4,184,739, Cl. 350-96.150.
d'Auria, Luigi; Dubos, Jacques; and Jacques, Andre, 4,184,740, Cl. 350-96.160.

Ducep, Jean-Bernard; Farge, Daniel; Ponsinet, Gerard; and Reisdorf, Daniel, to Rhone-Poulenc Industries. Daunorubicin derivatives. 4,185,111, Cl. 424-283.000.

Ducos, Jacques; and Duprez, Jean-Pierre, to Laboratoire Spad. Endodontical treatment paste. 4,184,879, Cl. 106-35.000.

Dudley, Don J. Magnetic tape processor having cleaning and evaluating means. 4,185,306, Cl. 360-71.000.

Duff, James A.: *See*—
Green, Paul N.; and Duff, James A., 4,185,313, Cl. 360-133.000.

Dunlop Limited: *See*—
Bennett, William D., 4,184,642, Cl. 241-65.000.

Du Pont de Nemours, E. I., and Company: *See*—
Cossaboon, Karl F., 4,185,036, Cl. 260-580.000.
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., 4,185,130, Cl. 427-47.000.
Halvorson, David O.; and Sloan, Walter J., 4,184,893, Cl. 134-25.00R.
Hoeschele, Guenther K., 4,185,003, Cl. 260-45.80N.
Seney, John S., 4,184,646, Cl. 242-45.000.
Wu, Souheng, 4,184,997, Cl. 260-40.00R.

Duprez, Jean-Pierre: *See*—
Ducos, Jacques; and Duprez, Jean-Pierre, 4,184,879, Cl. 106-35.000.

Dvorak, Jarda, to O.K. Machine and Tool Corp. Manual wire cut and strip tool. 4,184,389, Cl. 81-9.50B.

Dyhr, Jan; Karll, Bent; and Andersen, Hans C., to Danfoss A/S. Compressor unit, particularly for refrigerators. 4,184,810, Cl. 417-363.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Buning, Robert; Blaschke, Franz; and Trautvetter, Werner, 4,185,048, Cl. 525-80.000.
Gebauer, Peter; Kaufer, Wilhelm; and Mohrke, Helmut, 4,185,000, Cl. 260-42.270.
Kreuzburg, Gerhard; Lenz, Arnold; and Rogler, Walter, 4,185,029, Cl. 260-448.80A.

Dynapol: *See*—
Furia, Thomas E., 4,185,122, Cl. 426-250.000.

E. R. Squibb & Sons, Inc.: *See*—
Metzger, Julio, 4,185,092, Cl. 424-123.000.

East, James R., to A & S Building Systems, Inc. Roof construction. 4,184,299, Cl. 52-463.000.

Eastman Kodak Company: *See—*
Eeles, Alan G.; and O'Neill, Alan D., 4,184,876, Cl. 430-505.000.
Paul, John O.; and Babaoglu, Kerinchan, 4,184,936, Cl. 204-195.00R.
Schubert, Richard M., 4,184,923, Cl. 435-10.000.

Eaton Corporation: *See—*
Lade, Robert W.; Jaskolski, Stanley V.; Spellman, Gordon B.; and Schutten, Herman P., 4,185,253, Cl. 331-66.000.

Eberhard Hoesch & Sohne GmbH & Co.: *See—*
Schotten, Alfons, 4,184,960, Cl. 210-230.000.

Eberlin, Helmut; Halada, Karl R.; and Kaufmann, Peter. Arrangement for the transportation and storage of heavy goods of bulky dimensions. 4,184,354, Cl. 72-250.000.

Eckle, Otto, to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH. Facing and boring head. 4,184,391, Cl. 82-1.200.

Eckmayer, Zdenek; Berg, Alexander; and Kuhn, Joachim, to Carl Freudenberg, Firma. Process for the production of collagen fibers. 4,185,011, Cl. 260-123.700.

Eckstein, Udo; and Theidel, Hans, to Bayer Aktiengesellschaft. Fluorescent dyestuffs. 4,184,977, Cl. 252-301.220.

Eden, Jamal S., to B. F. Goodrich & Company. Selective catalytic oxidation of carbon monoxide in the presence of olefin monomer. 4,185,039, Cl. 260-654.00A.

Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., to Du Pont de Nemours, E. I., and Company. Magnetic image decorator. 4,185,130, Cl. 427-47.000.

Edwards, Elizabeth G. Bath brush. 4,184,221, Cl. 15-114.000.

Edwards, James W. Wall-mounted fork lift. 4,184,570, Cl. 187-6.000.

Eeles, Alan G.; and O'Neill, Alan D., to Eastman Kodak Company. Color photographic materials having increased speed. 4,184,876, Cl. 430-505.000.

Effey, Gunter: *See—*
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, 4,185,025, Cl. 260-406.000.

Eichenberger, Kurt; Bosshard, Hans; Buhler, Niklaus; Goschke, Richard; and Jaeggi, Knut A., to Ciba-Geigy Corporation. Certain benzofuryl or benzothienyl-2-glyoxylic acid compounds. 4,185,110, Cl. 424-275.000.

Eickmann, Karl. Internal gear device with balancing recesses in the insert member. 4,184,820, Cl. 418-71.000.

Eisenbrandt, Gerald A.: *See—*
Laughlin, James P.; and Eisenbrandt, Gerald A., 4,184,340, Cl. 62-129.000.

Eisenreich, Norbert: *See—*
Kugler, Hans-Peter; and Eisenreich, Norbert, 4,184,748, Cl. 350-190.000.

Eizember, Richard F.; and Vogler, Kathleen R., to Eli Lilly and Company. Dinitroaniline purification with inorganic acid halides. 4,185,035, Cl. 260-577.000.

Electra Food Machinery, Inc.: *See—*
Jimenez, James A., 4,184,418, Cl. 99-353.000.

Elfab Corporation: *See—*
Ammon, J. Preston; and Weaver, Harry R., 4,184,735, Cl. 339-217.00S.

Eli Lilly and Company: *See—*
Eizember, Richard F.; and Vogler, Kathleen R., 4,185,035, Cl. 260-577.000.

Ellingen, Karl; and Gaumert, Wolfgang, to Klockner-Humboldt-Deutz AG. Method of conditioning hot gases for filtration. 4,184,886, Cl. 106-100.000.

Elliott Brothers (London) Limited: *See—*
Silverstone, Derek M., 4,185,281, Cl. 340-706.000.

Ellis, Austin J., Jr. Coin operated battery charger and charging system check. 4,184,580, Cl. 194-1.00R.

Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., to Occidental Research and Engineering Ltd. Phosphoric acid ammoniation apparatus with water quench. 4,185,075, Cl. 422-191.000.

Ellis, William C.: *See—*
Kulischenko, Walter; and Ellis, William C., 4,184,576, Cl. 192-41.00R.

Ellwood, Henry, to USM Corporation. Mixer rotor with a shear edge. 4,184,773, Cl. 366-91.000.

Elsner, Burghardt: *See—*
Becker, Kunibert; Elsner, Burghardt; and Lagodka, Gunter, 4,184,791, Cl. 405-291.000.

Eltra Corporation: *See—*
Hughes, Ronald H.; and Morena, Robert, 4,184,883, Cl. 106-56.000.

Emboss-O-Prestige LTEE: *See—*
Larin, Jean, 4,184,277, Cl. 40-10.00R.

Emerson Electric Co.: *See—*
Blachly, Donald L.; Hochstatter, Brian R.; and O'Hearne, Robert L., 4,184,395, Cl. 83-486.100.

EMI Limited: *See—*
Moore, John F., 4,185,195, Cl. 250-361.00R.

Engeler, William E.; Tiemann, Jerome J.; and Baertsch, Richard D., to General Electric Company. Charge storage memory with isolation nodal for each bit line. 4,185,318, Cl. 365-183.000.

England, J. Melvin: *See—*
Rabelos, Nicholas A., 4,184,567, Cl. 182-5.000.

England, Michael J., to Girling Limited. Internal shoe drum brakes. 4,184,574, Cl. 188-341.000.

Epes, Archie C. Building press. 4,184,621, Cl. 227-26.000.

Erben, Ludwig, to Trutzschler GmbH & Co. KG. Sliver density sensing apparatus. 4,184,361, Cl. 73-37.700.

Erickson, John S.; Thompson, Earl R.; and Curran, Patrick M., to United Technologies Corporation. Control of microstructure in cast eutectic articles. 4,184,900, Cl. 148-32.000.

Erickson, Thomas D.; and Hohman, Charles M., to Owens-Corning Fiberglas Corporation. Energy efficient apparatus and process for manufacture of glass. 4,184,861, Cl. 65-27.000.

Erickson, Vedick A.: *See—*
Thiele, Werner H.; and Erickson, Vedick A., 4,184,610, Cl. 221-278.000.

Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik: *See—*
Pinior, Gernot, 4,184,770, Cl. 356-430.000.

Escher Wyss GmbH: *See—*
Christin, Alan; and Zembrot, Anton, 4,184,268, Cl. 34-124.000.

ESCO Corporation: *See—*
Breitbarth, Michael D., 4,184,533, Cl. 164-181.000.

Espinosa, Robert J.: *See—*
Doehler, Oskar F.; Espinosa, Robert J.; and Groshart, Gary G., 4,185,225, Cl. 315-3.500.

Esser, Gustav; and Marten, Wolfgang, to Oswald ForstMaschinenfabrik und Apparatebauanstalt GmbH. Workpiece holder for a vertical broaching machine for broaching annular workpieces. 4,184,691, Cl. 279-5.000.

Etablissements A. Mure: *See—*
Bastien, Pierre, 4,184,393, Cl. 83-155.100.

Ethyl Corporation: *See—*
Hornbaker, Edwin D.; Nugent, Adam, Jr.; and Loechelt, Cecil P., 4,184,924, Cl. 202-175.000.

Eutectic Corporation: *See—*
Wasserman, Rene; and Simm, Wolfgang, 4,185,136, Cl. 428-368.000.

Evans, Charles B.; Fenton, John D.; and Staff, Bonner W., to Vought Corporation. Apparatus for evaluating a bond. 4,184,373, Cl. 73-588.000.

Evans, James P., to Johnson, Paul H., a part interest. Ratcheting wrench with rotating feature. 4,184,390, Cl. 81-57.300.

Evin, Genevieve: *See—*
Castro, Bertrand; Menard, Joel; Evin, Genevieve; and Corvol, Pierre, 4,185,096, Cl. 424-177.000.

Ewanus, Walter; and McKay, George A., to Westinghouse Electric Corp. Communications system using time position modulation and correlation slope demodulation. 4,185,241, Cl. 325-47.000.

Ewig, John, to Parker Manufacturing Company. Spring powered stapler. 4,184,620, Cl. 227-8.000.

Exin-Iber S. A.: *See—*
Arnau Pibet, Jose M., 4,184,285, Cl. 46-24.000.

Expert N.V.: *See—*
Oosterling, Pieter A.; and Van Zweeden, Adriaan, 4,184,312, Cl. 56-341.000.
Oosterling, Pieter A.; and Van Zweeden, Adriaan, 4,184,426, Cl. 100-100.000.

Extracorporeal Medical Specialties, Inc.: *See—*
Casson, M. E.; Moore, Albert E.; and Berry, George J., Sr., 4,184,815, Cl. 417-477.000.
Oscarsson, Rolf A.; and Moore, Albert E., 4,184,962, Cl. 210-232.000.

Exxon Research & Engineering Co.: *See—*
Angier, Derek J.; and Barnum, Harry W., 4,184,942, Cl. 208-44.000.
Feldman, Nicholas, 4,184,851, Cl. 44-71.000.
Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, 4,184,988, Cl. 260-23.50A.

Facet Enterprises, Inc.: *See—*
Miller, Donald L., 4,184,577, Cl. 192-84.00C.

Fachbach, Heinz: *See—*
Kirchweger, Karl; Thien, Gerhard; and Fachbach, Heinz, 4,184,471, Cl. 123-198.00E.

Faehling, Francis L.; Billmeyer, Thomas F.; and Moss, Robert G., to Preway Inc. Fireplace. 4,184,475, Cl. 126-121.000.

Fah, Hansjakob, to Ciba-Geigy Corporation. Process for producing benzofurazan-1-oxides. 4,185,018, Cl. 548-126.000.

Farber, Heinrich: *See—*
Muller, Jurgen; and Farber, Heinrich, 4,185,200, Cl. 250-471.000.

Farge, Daniel: *See—*
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,185,107, Cl. 424-263.000.
Ducep, Jean-Bernard; Farge, Daniel; Ponsinet, Gerard; and Reisdorf, Daniel, 4,185,111, Cl. 424-283.000.

Farrell, Bernard T., to Advanced Drainage Systems, Inc. Imprinting machine. 4,184,828, Cl. 425-143.000.

Fastenmeier, Karl: *See—*
Meinke, Hans H.; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lidenmeier, Heinz, 4,184,492, Cl. 128-303.140.

Fauth, Thomas A.; and Adamski, Joseph A., to United States of America, Air Force. Procedure for the synthesis of stoichiometric proportioned indium phosphide. 4,185,081, Cl. 423-299.000.

Feder, Joseph: *See—*
Tolbert, William R.; Feder, Joseph; and Kimes, Richard C., 4,184,916, Cl. 435-241.000.

Feiker, George E., to General Electric Company. Distribution control system. 4,185,272, Cl. 340-168.00R.

Feldkamper, Richard: *See—*
Achelpohl, Fritz; and Feldkamper, Richard, 4,184,627, Cl. 229-60.000.

Feldman, David K., to United States of America, Energy. Valve for controlling solids flow. 4,184,662, Cl. 251-82.000.

Feldman, Nicholas, to Exxon Research & Engineering Co. Borated derivatives of hydrocarbon substituted succinamic acids and/or acid salts thereof are flow improvers for middle distillate fuel oils (PT-364). 4,184,851, Cl. 44-71.000.

Feldstein, Michael; and Thackaberry, Harold, to Data General Corporation. Magnetic head adjustment mechanism. 4,185,309, Cl. 360-97.000.

Fellinger, Frank; and Das, Santanu, to International Telephone and Telegraph Corporation. Fault-tolerant clock signal distribution arrangement. 4,185,245, Cl. 328-103.000.

Fellows, Horace G.: *See*—
Robinson, William G.; and Fellows, Horace G., 4,184,841, Cl. 432-258.000.

Fencl, George A., to Talos Systems, Inc. Low noise system and method for sequentially sensing induced signals in digitizer grid conductors. 4,185,165, Cl. 178-19.000.

Fenton, John D.: *See*—
Evans, Charles B.; Fenton, John D.; and Staff, Bonner W., 4,184,373, Cl. 73-588.000.

Ferranti Limited: *See*—
Walters, Frank, 4,185,230, Cl. 315-169.400.

Fiber Industries, Inc.: *See*—
Kinkel, Richard L., 4,185,137, Cl. 428-372.000.

Fibra-Sonics, Inc.: *See*—
Murry, Edward J.; and Brumbach, Joseph F., 4,184,510, Cl. 137-565.000.

Field, Sydney J.: *See*—
Magill, Robert J.; and Field, Sydney J., 4,184,288, Cl. 49-7.000.

Filimonov, Gennady V.: *See*—
Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.

Filloux, Jean H. Super sharp and stable, extremely low power and minimal size optical null detector. 4,185,239, Cl. 324-259.000.

Fima, Raoul G., to Jumpak Products, Inc. Motor vehicle with remote battery connector. 4,185,204, Cl. 307-10.00R.

Fingermatrix, Inc.: *See*—
Fischer II, Frederic P.; and Pflueger, Phillip G., 4,185,270, Cl. 340-146.30E.

Finkelstein, Ronald S.: *See*—
McKenna, Lawrence W., Jr.; Finkelstein, Ronald S.; and Haynes, John K., Jr., 4,185,051, Cl. 525-370.000.

Finley, James D.: *See*—
McMillen, James W., Jr.; and Finley, James D., 4,185,208, Cl. 307-140.000.

Fischer II, Frederic P.; and Pflueger, Phillip G., to Fingermatrix, Inc. Fingerprint identification method and apparatus. 4,185,270, Cl. 340-146.30E.

Fishel, Richard L.: *See*—
Benkowski, William J.; Fishel, Richard L.; and Maurer, Francis J., 4,184,829, Cl. 425-202.000.

Flachenecker, Gerhard: *See*—
Meinke, Hans H.; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lidenmeier, Heinz, 4,184,492, Cl. 128-303.140.

Flair, Henry J., to Illinois Tool Works Inc. Gerotor internal gear testing. 4,184,264, Cl. 33-179.50C.

Flakus, Werner; and Disteldorf, Josef, to Veba-Chemie Aktiengesellschaft. Thermally linkable aqueous polyurethane dispersions. 4,184,989, Cl. 260-29.2TN.

Flavell, Evan R.; and Counsilman, James E., to Isokinetics, Inc. Programmable acceleration exerciser. 4,184,678, Cl. 272-129.000.

Fleck, Carl M. Apparatus for the generation of ions. 4,185,316, Cl. 361-230.000.

FMC Corporation: *See*—
Munday, Theodore F.; Goldstein, David; and Walden, John, 4,185,079, Cl. 423-210.000.

Fogelberg, Mark J., to Borg-Warner Corporation. Torque transfer mechanism. 4,184,575, Cl. 192-36.000.

Ford Motor Company: *See*—
Chancellor, Richard A., 4,184,417, Cl. 98-58.000.

Forster, Hans-Joachim M., to Daimler-Benz Aktiengesellschaft. Multi-speed transmission, especially for motor vehicles. 4,184,386, Cl. 74-688.000.

Fortunko, Christopher M.: *See*—
Thompson, Robert B.; and Fortunko, Christopher M., 4,184,374, Cl. 73-640.000.

Foster Wheeler Development Corporation: *See*—
Bryers, Richard W.; and Taylor, Thomas E., 4,184,438, Cl. 110-263.000.

Foster Wheeler Energy Corporation: *See*—
Schroeder, Joseph W.; and Krawchuk, Myron T., 4,184,243, Cl. 29-427.000.
Talmud, Fred M.; and Garcia-Mallol, Juan-Antonio, 4,184,455, Cl. 122-4.00D.
Taylor, Thomas E.; and Bryers, Richard W., 4,184,456, Cl. 122-4.00D.

Fourcadier, Chantal: *See*—
Grollier, Jean F.; and Fourcadier, Chantal, 4,184,844, Cl. 8-10.200.

Fournet, Richard S. Combination mirror and display device. 4,184,278, Cl. 40-152.100.

Fovargue, Arthur G., to Westinghouse Electric Corp. Magnetic contactor with an adjustable latch release. 4,185,259, Cl. 335-167.000.

Fox, Gaston M.; and Wright, Thomas H., to U. S. Industries, Inc. Poultry neck cutting, breaking and stretching method. 4,184,230, Cl. 17-52.000.

Frakes, James H., Jr.: *See*—
Puderbaugh, George; Pike, Robert W.; Myers, Thomas S.; and Frakes, James H., Jr., 4,185,072, Cl. 422-99.000.

Fraley, Thomas O.: *See*—
Cornett, Jack E.; Corley, Ralph C.; Fraley, Thomas O.; and Saunders, Andrew A., Jr., 4,184,327, Cl. 60-240.000.

France, James R.; Baiocchi, Fred; and Concar, George A., to C. J. Patterson Company. Stable water in oil emulsion systems for cosmetic and pharmaceutical preparations. 4,184,978, Cl. 252-309.000.

Franco, Pierre. Sanitary napkin. 4,184,498, Cl. 128-290.00R.

Frankel, David S.: *See*—
Knazek, Richard A.; Gullino, Pietro M.; and Frankel, David S., 4,184,922, Cl. 435-284.000.

Franklin, Priscilla S.; and Jones, Frederick L., to Monarch Marking Systems, Inc. Tamper proof label. 4,184,701, Cl. 283-9.00R.

Franson, Claude: *See*—
Virrion, Aime; and Franson, Claude, 4,185,113, Cl. 424-286.000.

Franzischka, Wolfgang: *See*—
Schroeder, Wolfgang; and Franzischka, Wolfgang, 4,184,982, Cl. 252-452.000.

Freas, Roy W.: *See*—
Carrigan, David B.; and Freas, Roy W., 4,184,523, Cl. 141-238.000.

French, Charles S.: *See*—
Boyer, Scott M.; Dawson, Chris R.; French, Charles S.; Morgan, Clyde R.; and Grabos, Fred F., Jr., 4,184,273, Cl. 36-131.000.

Frenkel C-D Aktiengesellschaft: *See*—
Meyer, Paul, 4,184,772, Cl. 366-77.000.

Frey, Peter J.: *See*—
Lintelmann, Willy; and Frey, Peter J., 4,185,278, Cl. 340-630.000.

Frey, Robert L., to P. R. Mallory & Co. Inc. Wire-wound resistor. 4,185,263, Cl. 338-301.000.

Freyn, Fritz, to List, Hans. Decompression device for internal combustion engines. 4,184,468, Cl. 123-182.000.

Freyre, Leopoldo E. Automatic sprayer. 4,184,612, Cl. 222-70.000.

Fried. Kruff Gesellschaft mit beschrankter Haftung: *See*—
Lindermann, Herbert, 4,184,535, Cl. 164-442.000.

Friedman, Donald E., to Pet Incorporated. Suction pressure control system. 4,184,341, Cl. 62-175.000.

Friend, Leroy. Method of fishing using a slip-ring fishing device. 4,184,280, Cl. 43-4.500.

Frietag, Dieter: *See*—
Idel, Karsten-Josef; Frietag, Dieter; and Nouvertne, Werner, 4,185,009, Cl. 260-45.90R.

Fritz, Walter M.: *See*—
United States of America, National Aeronautics and Space Administration; Dillard, Paul A.; Fritz, Walter M.; and Lott, Dan R., 4,184,903, Cl. 156-104.000.

Fuhrer, Jean-Claude: *See*—
Beyhurst, Desire; Bronner, Jean-Jacques; Fuhrer, Jean-Claude; and Kraess, Henri, 4,185,174, Cl. 179-175.20R.

Fuji Photo Film Co., Ltd.: *See*—
Takeda, Keiji, 4,184,874, Cl. 430-336.000.

Fuji Photo Optical Co., Ltd.: *See*—
Yamauchi, Toshiro; Saito, Takemi; and Kanayama, Shigehiro, 4,185,297, Cl. 358-55.000.

Fuji Sangijo Co., Ltd.: *See*—
Ono, Masaharu; Kurokawa, Hirofumi; Yoshida, Kimio; Itado, Tadashi; and Uchihara, Yasuhiro, 4,184,235, Cl. 29-33.00R.

Fujimoto, Yuichi, to Tokyo Shibaura Electric Co., Ltd. Means for generating an X-ray exposure command in response to a video signal component. 4,185,198, Cl. 250-416.0TV.

Fujioka, Masahiko, to Tokyo Shibaura Electric Co., Ltd. Enclosed-type magnetic disc recording and/or reproducing apparatus. 4,185,308, Cl. 360-97.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Kikuchi, Hiroyuki; Kawaguchi, Nobuo; and Shiokawa, Hideaki, 4,185,119, Cl. 424-258.000.

Fujitsu Limited: *See*—
Namura, Hisaki; Ohta, Koichi; Takeda, Masao; and Minematsu, Kiyoshi, 4,185,248, Cl. 330-2.000.
Takemae, Yoshihiro; and Nakano, Masao, 4,185,320, Cl. 365-203.000.
Yoshikawa, Kazuo; and Andoh, Shizuo, 4,185,229, Cl. 315-169.400.

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Koda, Hiroyuki; Hamaya, Kunio; Yoshizaki, Hiroyuki; Kojima, Yutaka; Tsuchiya, Shiro; Fukuda, Shinichi; and Ikeno, Takashi, 4,184,911, Cl. 159-47.00R.

Fukunaga, Syoichi: *See*—
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Ogata, Mitsutoshi; and Naito, Norinao, 4,184,905, Cl. 156-221.000.

Fuller, Dean L., to Solar Products Limited. Heat exchangers and solar heating. 4,184,478, Cl. 126-434.000.

Fuller, Hans-Jurgen: *See*—
Schmidbaur, Hubert; and Fuller, Hans-Jurgen, 4,185,028, Cl. 260-430.000.

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Watanabe, Sadao; Itoh, Mitsuru; Sakairi, Tadashi; Funakoshi, Yasutomo; and Hiya, Kohji, 4,185,262, Cl. 335-302.000.

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Kaneko, Yoichi; Kimura, Katsuhiro; Watanabe, Mitsuru; Funamizu, Tadashi; and Kikuchi, Itsuo, 4,185,181, Cl. 219-10.55F.
Furia, Thomas E., to Dynapol. Method for inhibiting the foaming of aqueous solutions containing a polymeric dye. 4,185,122, Cl. 426-250.000.
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Pevzner, Lev V.; Ustkachkintsev, Alexandr N.; Yakobson, Boris V.; Timofeev, Andrei V.; Furman, Anna A.; Vaskanov, Sergei E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M., 4,184,972, Cl. 252-62.540.
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Dittmar, Walter; Futterer, Eberhard; and Lohaus, Gerhard, 4,185,106, Cl. 424-263.000.
GAF Corporation: *See*—
Woerner, Douglas C.; and Manning, Andrew J., 4,185,133, Cl. 427-209.000.
Gaffney, William, to Mintz, Charlotte. Method for producing sheet material. 4,184,904, Cl. 156-145.000.
Gage, Walter T. Artillery game and playing method. 4,184,680, Cl. 273-101.000.
Galmiche, Rene G.: *See*—
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Katz, Hugh S.; and Garrett, Anthony N., 4,184,724, Cl. 312-209.000.
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Rubin, Sol R.; and Gates, Raymond D., 4,184,703, Cl. 285-49.000.
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Schwabauer, Nile L., 4,184,822, Cl. 425-28.00B.
Gaumert, Wolfgang: *See*—
Ellingen, Karl; and Gaumert, Wolfgang, 4,184,886, Cl. 106-100.000.
Gauthier, Michel; Le Foll, Francois; and Charles, Christian, to Centre National pour l'Exploitation des Oceans. Device for use in the emptying of dredging buckets. 4,184,583, Cl. 198-703.000.
Gavin, Thomas W. Reclosable dispensing carton. 4,184,597, Cl. 206-611.000.
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Lanfermann, Willy, 4,184,715, Cl. 299-43.000.
Gebruder Weiss KG: *See*—
Kneer, Franz X., 4,184,269, Cl. 34-168.000.
Gehrke, George E. Fly, line and leader sinker composition. 4,184,889, Cl. 106-267.000.
Geldmacher, Erwin H. Method for producing cigarette packages and packages produced by this method. 4,184,591, Cl. 206-265.000.
Gelman Sciences, Inc.: *See*—
Vadnay, Attila; and von Reis, Charles E., 4,184,360, Cl. 73-28.000.
Gemein, Rudolf; and Pessel, Erich, to Kraftwerk Union Aktiengesellschaft. Rotating device for shapes, especially for turbosets. 4,184,721, Cl. 308-9.000.
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Atkinson, Lowell G.; and Kennedy, Edmund E., 4,185,240, Cl. 325-25.000.
General Connector Corporation: *See*—
Nicholson, Dick H., 4,184,415, Cl. 98-33.00A.
General Electric Company: *See*—
Anderson, Rodger O.; and Piekarski, Arthur J., 4,184,797, Cl. 416-95.000.
Anthony, Thomas R.; and Cline, Harvey E., 4,184,897, Cl. 148-1.500.
Barahia, Manoj M., 4,184,658, Cl. 248-606.000.
Byrne, Michael, 4,185,196, Cl. 250-381.000.
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Chapin, James R., 4,184,434, Cl. 105-456.000.
Cohen, Stuart C., 4,185,047, Cl. 525-94.000.
Colliton, Walter A., 4,185,231, Cl. 315-189.000.
Engeler, William E.; Tiemann, Jerome J.; and Baertsch, Richard D., 4,185,318, Cl. 365-183.000.
Feiker, George E., 4,185,272, Cl. 340-168.00R.
Hall, Gerald H., 4,184,783, Cl. 403-157.000.
Herbst, LeRoy J., 4,184,500, Cl. 134-114.000.
Kushner, Gerald J.; and Raleigh, Edward, 4,184,661, Cl. 251-82.000.
Levinson, Lionel M., 4,184,984, Cl. 252-518.000.
Mark, Victor; and Wilson, Phillip S., 4,184,994, Cl. 260-32.80R.
Noble, Maynard G., 4,184,995, Cl. 260-37.0SB.
Olander, Walter K., 4,184,999, Cl. 260-42.180.
Pasco, Wayne D.; and Klug, Frederic J., 4,184,885, Cl. 106-73.400.
Pohl, Walter J., 4,184,342, Cl. 62-511.000.
Riesland, David H.; Hammer, Edward E.; and Lemmers, Eugene, 4,185,233, Cl. 315-276.000.
Talbot, Howard M., 4,184,835, Cl. 425-577.000.
von Herrmann, Pieter J.; and Williams, Ronald S., 4,184,827, Cl. 425-135.000.
General Scanning, Inc.: *See*—
Montagu, Jean I., 4,185,215, Cl. 310-83.000.
General Tire & Rubber Company, The: *See*—
Benkowski, William J.; Fishel, Richard L.; and Maurer, Francis J., 4,184,829, Cl. 425-202.000.
Burke, Earl S., 4,185,146, Cl. 521-99.000.
George, Jay R.: *See*—
Burkey, David J.; Clark, Lawrence; George, Jay R.; and Long, Harry F., 4,184,940, Cl. 204-281.000.
Geosource Inc.: *See*—
Day, Roger W., 4,184,771, Cl. 366-3.000.
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Gerlach, Horst W. A., to United States of America, Army. Microstrip open ring resonator oscillators. 4,185,252, Cl. 331-56.000.
Gerstenbacher, Joseph: *See*—
Collins, James; and Gerstenbacher, Joseph, 4,184,682, Cl. 273-106.00B.
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Becker, Kunibert; Elsner, Burghardt; and Lagodka, Gunter, 4,184,791, Cl. 405-291.000.
Ghelardoni, Mario: *See*—
Meli, Alberto; Bianchini, Claudio; del Soldato, Piero; Ghelardoni, Mario; Pestellini, Vittorio; and Volterra, Giovanna, 4,185,124, Cl. 424-324.000.
Ghosh, Sambhunath: *See*—
Klass, Donald L.; and Ghosh, Sambhunath, 4,184,547, Cl. 166-246.000.
Giallorenzi, Thomas G., to United States of America, Navy. High-speed electrooptical A/D converter. 4,185,274, Cl. 340-347.00P.
Gilde, Louis C., Jr., to Campbell Soup Company. Wastewater treatment system. 4,184,789, Cl. 405-36.000.
Gilker, Clyde; and Lamke, Arland D., to McGraw-Edison Company. Latch operated tap changing switch for transformer regulating system. 4,185,177, Cl. 200-17.00R.
Gillette Company, The: *See*—
Poisson, Norman D., 4,184,247, Cl. 30-59.000.
Trotta, Robert A., 4,184,246, Cl. 30-47.000.
Gillman, Hyman D.; and King, James P., to United States of America, Air Force. Fluorinated phosphinic acids. 4,185,031, Cl. 260-502.40R.
Ginsburgh, Irwin; and Papadopoulos, Christos G., to Standard Oil Company (Indiana). Method for determining the position and inclination of a flame front during in situ combustion of an oil shale retort. 4,184,548, Cl. 166-251.000.
Ginter, Thomas O.; and Lalk, James W., to Dow Chemical Company, The. Anti-snag finishing treatment for fabrics. 4,185,128, Cl. 427-390.00R.
Girling Limited: *See*—
England, Michael J., 4,184,574, Cl. 188-341.000.
Margetts, Hugh G., 4,184,717, Cl. 303-52.000.
Giulie, Joe D., to Minnesota Mining and Manufacturing Company. Binding device. 4,184,782, Cl. 402-15.000.
Givaudan Corporation: *See*—
Krasnobajew, Victor; and Boeniger, Regula, 4,184,986, Cl. 260-6.000.
Gjerde, Arne, to A/S Norcem. Motor-driven saw having a circular saw blade. 4,184,394, Cl. 83-477.100.
Glahn, Robert J.: *See*—
Morris, Dow V.; and Glahn, Robert J., 4,184,411, Cl. 92-171.000.
Globe Manufacturing Co.: *See*—
Bowman, J. Robert, 4,184,212, Cl. 2-5.000.
Godare, William L.: *See*—
Carmichael, James T.; Diehl, Robert J.; and Godare, William L., 4,184,504, Cl. 137-15.000.
Godwin, Millard C.: *See*—
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Goel, Pierre, to Canron, Inc. Track laying train. 4,184,431, Cl. 104-2.000.
Goetz, Bernhard: *See*—
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Gold-Aubert, Philippe; and Melkonian, Diran, to Sapos S.A. Tranquillizing complexes. 4,185,104, Cl. 424-254.000.
Goldstein, David: *See*—
Munday, Theodore F.; Goldstein, David; and Walden, John, 4,185,079, Cl. 423-210.000.
Goller, Glen J.; Petraglia, Vincent J.; and Dews, George, to United Technologies Corporation. Screen printing method for making an electrochemical cell electrode. 4,185,131, Cl. 427-113.000.
Goodman, Nathan M., custodian for Michelle B. and Michael W. Goodman: *See*—
Cutler, Jerome J., 4,184,345, Cl. 64-28.00R.
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Graham, John J., Jr., 4,184,681, Cl. 273-105.300.
Goodyear Tire & Rubber Company, The: *See*—
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Williams, Walter G., 4,184,823, Cl. 425-36.000.
Gordon, Woodford W. Apparatus for and method of forming accurate hinge axis tooth positioners. 4,184,255, Cl. 433-6.000.
Gorlitsin, Sergei N.; Koires, Vladimir I.; and Sokolov, Alexandr I. Device for mounting a tool on the movable crossbeam of a press. 4,184,358, Cl. 72-462.000.
Goschke, Richard: *See*—
Eichenberger, Kurt; Bosshard, Hans; Buhler, Niklaus; Goschke, Richard; and Jaeggi, Knut A., 4,185,110, Cl. 424-275.000.
Goss, John B.; and Morrow, William D. Method for removing a bearing assembly of a pedestal crane and a removable bearing assembly for a pedestal crane. 4,184,600, Cl. 212-70.000.
Gould Inc.: *See*—
Grasson, John L., 4,184,306, Cl. 153-240.000.
Gowan, Richard L., to United States of America, Navy. Data rate adaptive control device for Manchester code decoders. 4,185,273, Cl. 340-347.0DD.
Grabos, Fred F., Jr.: *See*—
Boyer, Scott M.; Dawson, Chris R.; French, Charles S.; Morgan, Clyde R.; and Grabos, Fred F., Jr., 4,184,273, Cl. 36-131.000.
Gracey, Charles M., to Aerojet-General Corporation. Gas monitor for liquid flow line. 4,184,359, Cl. 73-19.000.
Graham, John J., Jr., to Goodyear Aerospace Corporation. Ram-air inflatable, fabric, towed gunnery target. 4,184,681, Cl. 273-105.300.
Graham, Roy R., to PPG Industries, Inc. Size composition and method of producing same to render glass fiber having improved dispersibility in aqueous solutions. 4,185,138, Cl. 428-391.000.
Graser, Earl J.; and Killy, Earl J., to Olinkraft, Inc. Wrap-around beverage carrier with total separation. 4,184,626, Cl. 229-40.000.
Grasson, John L., to Gould Inc. Packaging method and apparatus. 4,184,306, Cl. 153-240.000.
Graupe, Daniel; and Causey, G. Donald. Method and means for adaptively filtering near-stationary noise from an information bearing signal. 4,185,168, Cl. 179-1.00P.
Gray, Donald I. Electric slot furnace. 4,185,160, Cl. 13-24.000.
Gray, Tommy L., to Span Instruments, Inc. Pressure instrument compensating bladder. 4,184,375, Cl. 73-706.000.
Green Cross Corporation, The: *See*—
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,185,016, Cl. 260-239.30T.
Green, Daniel R., to Pullman Incorporated. Convenience center for railway passenger vehicle. 4,184,433, Cl. 105-327.000.
Green, James W. Safety clutch for earring. 4,184,343, Cl. 63-12.000.
Green, Michael J.: *See*—
Draper, Richard W.; Green, Michael J.; and Casmer, Charles J., 4,185,101, Cl. 424-243.000.
Green, Paul N.; and Duff, James A., to Magnetic Peripherals Inc. Disc memory module dust shield. 4,185,313, Cl. 360-133.000.
Greenaway, David L., to LGZ Landis & Gyr Zug AG. Documents embossed with optical markings representing genuineness information. 4,184,700, Cl. 283-6.000.
Greenspan, Donald J., to U.S. Medical Research & Development, Inc. Method of and apparatus for collecting cultures. 4,184,483, Cl. 128-759.000.
Gremyakov, Ivan P.: *See*—
Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.
Grenfell, Julian P.; and Stephens, Stanley W., to Badalex Limited. Coaxial seal and tip off burners. 4,184,728, Cl. 316-31.000.
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Swasey, Archie N.; and Grenier, George P., 4,184,824, Cl. 425-75.000.
Grenier, Joseph N. O. Ladder standoff and ridge pole hook. 4,184,569, Cl. 182-206.000.
Griffin, Noel J.; Miller, Larry D.; Squire, Gerald K.; and Knochelmann, Carl E., Jr., to Cincinnati Electronics Corporation. Vehicular magnetic coded signalling apparatus. 4,185,265, Cl. 340-32.000.
Griffin, Warren R., to United States of America, Air Force. Channel sealant compositions. 4,185,041, Cl. 525-188.000.
Grimstad, Ronald N.: *See*—
de Buhr, Harold E.; Bass, Merlyn D.; and Grimstad, Ronald N., 4,184,558, Cl. 180-14.00R.
Grise, Frederick G. J.; and Lovell, Walter. Mixing material in sealed containers. 4,184,422, Cl. 99-485.000.
Griset, Ernest J., Jr., to Akzona Incorporated. Production of novelty yarns. 4,184,316, Cl. 57-295.000.
Grollier, Jean F.; and Fourcadier, Chantal, to L'Oreal. Storage stable indoaniline and indophenol dye solutions, a process for producing the same and hair dye compositions containing the same. 4,184,844, Cl. 8-10.200.
Grolman, Bernard: *See*—
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Groshart, Gary G.: *See*—
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Gross, Laurence H.: *See*—
Angell, Richard G., Jr.; and Gross, Laurence H., 4,185,070, Cl. 264-328.000.
Grossman, Jack J., to McDonnell Douglas Corporation. Wide angle narrow bandpass optical filter system. 4,184,749, Cl. 350-195.000.
Grosu, Stefan; and Preda, Vasile, to Institutul de Cercetare si Proiectare Pentru Industria Electrotehnica. Three pole electric motor. 4,185,217, Cl. 310-185.000.
Gruber, Wolfgang: *See*—
Batz, Hans-Georg; Draeger, Brigitte; Wahlefeld, August W.; Weimann, Gunter; and Gruber, Wolfgang, 4,184,848, Cl. 23-230.00B.
Roeschlau, Peter; Bernt, Erich; and Gruber, Wolfgang, 4,184,921, Cl. 435-11.000.
GTE Laboratories Incorporated: *See*—
Proud, Joseph M.; Auborn, James J.; and Bessett, Richard A., 4,185,206, Cl. 307-117.000.
Regan, Robert J., 4,185,228, Cl. 315-39.000.
GTE Sylvania Incorporated: *See*—
Baker, Scott H., 4,185,234, Cl. 315-411.000.
Ingalls, Jeffrey D.; and Kirkhuff, Ellison H., 4,185,232, Cl. 315-241.00R.
Quatrini, L. Rita; and MacInnis, Martin B., 4,185,078, Cl. 423-49.000.
Ritsko, Joseph E.; Acla, Howard L.; Vanderpool, Clarence D.; Scheithauer, William, Jr.; and Harris, Geoffrey L., 4,184,868, Cl. 75-0.500.
Guerra, Felix S. Document sorter. 4,184,727, Cl. 312-350.000.
Guggenbuhler, Max: *See*—
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Gullino, Pietro M.: *See*—
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Gummi-Henniges: *See*—
Henniges, Ernst, 4,184,722, Cl. 308-38.000.
Gunther, Alphons; Pomorin, Karl-Heinz; Spiess, Hans P.; and Ullrich, Georg J., to Hellige GmbH. Applicator for affixing a membrane to a sensor. 4,184,241, Cl. 29-278.000.
Gurewitsch, Anatole M.; and Weidemann, Robert W., to Swiss Aluminium Ltd. Bonded assembly. 4,184,302, Cl. 52-582.000.
Gurney, Richard S., to H. B. Fuller Company. Method of marking paved surfaces using a curable two-part epoxy composition comprising curable liquid epoxide and amine co-curative. 4,185,132, Cl. 427-137.000.
Guzman, Oscar. Variable definition projection systems. 4,184,762, Cl. 355-1.000.
Gyi, Ko Ko; and Ragle, Herbert U., to Burroughs Corporation. Partition of high performance floppy pack and associated means. 4,185,311, Cl. 360-99.000.
H. B. Fuller Company: *See*—
Gurney, Richard S., 4,185,132, Cl. 427-137.000.
H. H. Robertson Company: *See*—
Anderson, John W.; and Ting, Raymond M. L., 4,184,301, Cl. 52-478.000.
H. J. Langen & Sons Ltd.: *See*—
Langen, Marinus J. M.; and Strauss, Edgar H., 4,184,413, Cl. 93-19.000.
H.T.B. Limited: *See*—
Watkins, Harry J.; and Storey, Christopher C., 4,184,672, Cl. 271-105.000.
Habasit AG: *See*—
Habegger, Fernand, 4,184,589, Cl. 198-847.000.
Habegger, Fernand, to Habasit AG. Dimensionally stable synthetic conveyor belt. 4,184,589, Cl. 198-847.000.
Habenstein, Klaus, to Behringwerke Aktiengesellschaft. Diagnostic agent for the detection of ketone bodies in fluids and process for its manufacture. 4,184,850, Cl. 23-230.00B.
Hachisu, Masuo: *See*—
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Hafner, Otto P. Locking joint manufacture. 4,184,396, Cl. 83-623.000.
Hahn, Maneung: *See*—
Pengilly, Brian W.; and Hahn, Maneung, 4,185,046, Cl. 525-444.000.
Halada, Karl R.: *See*—
Eberlin, Helmut; Halada, Karl R.; and Kaufmann, Peter, 4,184,354, Cl. 72-250.000.
Haldeman, Charles W.; and Basmajian, Vahan V., to Megatech Corporation. Transparent internal combustion engine. 4,184,469, Cl. 123-193.0CP.
Hale, David J., to Brunswick Corporation. Internal combustion engine. 4,184,462, Cl. 123-55.0VS.
Hall, Floyd V., to Liggett Group Inc. Pocket-type charcoal filter and cigarette made therewith. 4,184,412, Cl. 93-1.00C.
Hall, Gerald H., to General Electric Company. Readily disengagable clevis. 4,184,783, Cl. 403-157.000.
Hall, Lawrence H.; and Novak, John R., to United States of America, Air Force. Annular laser having adjustable and interchangeable laser windows. 4,185,254, Cl. 331-94.50D.
Hallberg, Frederick C.: *See*—
Benedicto, John S. J.; Woodgate, Bruce E.; and Hallberg, Frederick C., 4,184,472, Cl. 125-23.00R.
Haller, Henry E., III: *See*—
Mole, Cecil J.; Haller, Henry E., III; and Wedman, Leonard N., 4,185,216, Cl. 310-178.000.
Hallgren, Henning R.; and Wide, Leif E., to Pharmacia Diagnostics AB. Method of indicating rheumatoid factors. 4,184,847, Cl. 23-230.00B.

Halliburton Company: *See—*
Streich, Steven G.; Knox, Lloyd C.; and Sullaway, Bob L., 4,184,515, Cl. 138-89.000.

Hallstrom, Olof A. Reciprocating conveyor and modular drive unit therefor. 4,184,587, Cl. 198-750.000.

Halvorson, David O.; and Sloan, Walter J., to Du Pont de Nemours, E. I., and Company. Pulsed rinse of particulate beds. 4,184,893, Cl. 134-25.00R.

Hamatani, Fumikazu: *See—*
Kerman, Stephen E.; Hamatani, Fumikazu; Tsutsumi, Fumio; and Tanaka, Yuji, 4,185,173, Cl. 179-99.00P.

Hamaya, Kunio: *See—*
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Hamilton, Calvin G., Sr. Non-spilling liquid container. 4,184,603, Cl. 220-254.000.

Hammer, Edward E.: *See—*
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Hanaya, Morimasa, to Toyo Pulp Co., Ltd. Disc-shaped chipper with detachable cutting members. 4,184,526, Cl. 144-235.000.

Handrick, Kurt; Kolling, Georg; Linden, Clemens; and Droll, Gunter, Jr., to Bergwerksverband GmbH. Catalytic oxidative process for the manufacture of anthraquinone from o-benzyl toluene. 4,185,023, Cl. 260-369.000.

Handrick, Kurt; Kolling, Georg; and Linden, Clemens, to Bergwerksverband GmbH. Nitric acid process for the manufacture of anthraquinone from o-benzyl-toluene. 4,185,024, Cl. 260-369.000.

Handsman, Fred B.; and Joiner, Thomas R., to Handsman, Fred B. Slide printing device. 4,184,763, Cl. 355-27.000.

Haney, Donald J.; and Orlando, Franklin P., to Cotton Machinery Company, Inc. Self-propelled module builder. 4,184,425, Cl. 100-100.000.

Hanson, Paul T. Container opening means. 4,184,605, Cl. 220-269.000.

Hara, Hideo: *See—*
Omura, Yoshimoto; Hara, Hideo; Kawashima, Isao; Sekiguchi, Keisuke; and Shino, Kuninori, 4,184,688, Cl. 274-15.00R.

Harada, Denzaburo: *See—*
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Harada, Susumu; and Ninomiya, Masakazu, to Nippondenso Co., Ltd. Electronically-controlled fuel injection system. 4,184,460, Cl. 123-32.0EG.

Harford, Jack R., to RCA Corporation. Synchronization signal separator circuit. 4,185,299, Cl. 358-153.000.

Harper, Patrick D.: *See—*
Bata, George T.; Spiker, Van P.; and Harper, Patrick D., 4,184,633, Cl. 236-68.00R.

Harrington Manufacturing Company: *See—*
Simmons, Roy Z., 4,184,706, Cl. 294-5.500.

Harris Corporation: *See—*
Bailey, David C.; and Klein, Robert E., 4,184,764, Cl. 355-54.000.
Morcom, William R.; and Berry, Kenneth A., 4,184,933, Cl. 204-192.0EC.

Harris, Geoffrey L.: *See—*
Ritsko, Joseph E.; Acla, Howard L.; Vanderpool, Clarence D.; Scheithauer, William, Jr.; and Harris, Geoffrey L., 4,184,868, Cl. 75-0.500.

Harris, V. C.: *See—*
Price, Robert C.; and Harris, V. C., 4,184,565, Cl. 181-252.000.

Harrison, Derek R.: *See—*
Taylor, John B.; and Harrison, Derek R., 4,185,102, Cl. 424-246.000.

Harrison, Earnest R., Jr., to United States of America, Air Force. Means for reducing spurious frequencies in a direct frequency synthesizer. 4,185,247, Cl. 328-165.000.

Harshaw Chemical Company, The: *See—*
Shaw, Glen A., 4,184,973, Cl. 252-174.230.

Harvey, George A., to U.M.E.C.-Boydell (Belting) Limited. Endless band conveyors. 4,184,585, Cl. 198-707.000.

Hasegawa, Tsutomu: *See—*
Tanaka, Yoichi; Tsuruta, Masamichi; Takahashi, Koji; Hasegawa, Tsutomu; and Hori, Makoto, 4,184,971, Cl. 252-62.900.

Hashimoto, Masakatsu: *See—*
Mochida, Ei; Ogawa, Nobuhisa; Shinkai, Hiroyuki; and Hashimoto, Masakatsu, 4,185,084, Cl. 424-1.000.

Hashimoto, Nobuo; and Hirata, Hiroshi, to Minolta Camera Kabushiki Kaisha. Automatic focus adjustment circuitry for motion picture cameras. 4,184,753, Cl. 352-140.000.

Hashimoto, Shintaro: *See—*
Morino, Masuaki; and Hashimoto, Shintaro, 4,185,170, Cl. 179-1.0SM.

Hassman, Kenneth. Connecting member for constructing floors. 4,184,303, Cl. 52-669.000.

Hatch, Arthur E.; and Yates, Douglas A., to Mobil Tyco Solar Energy Corporation. Apparatus for controlled growth of silicon and germanium crystal ribbons. 4,185,076, Cl. 422-246.000.

Hatchett, Michael R.; and Rigbey, Leonard J., to International Business Machines Corporation. Record disk cartridge having eject spring within cartridge. 4,185,314, Cl. 360-133.000.

Hauck, Bobbie W.: *See—*
Wenger, La Von G.; Clark, Douglas S.; and Hauck, Bobbie W., 4,185,123, Cl. 426-272.000.

Hauff, Alfred: *See—*
Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Stephan, Herbert; and Stark, Friedrich, 4,184,448, Cl. 118-729.000.

Hausdorfer, Michael: *See—*
Hess, Heinz; and Hausdorfer, Michael, 4,185,295, Cl. 358-22.000.

Hawk, Robert M.; and Wey, Robert A., to Corning Glass Works. Filament-to-device coupler. 4,184,741, Cl. 350-96.200.

Hawkes, Charles V., to Research Association for the Paper and Board, Printing and Packaging Industries, The. Bookbinding. 4,184,218, Cl. 11-1.0AD.

Haynes, John K., Jr.: *See—*
McKenna, Lawrence W., Jr.; Finkelstein, Ronald S.; and Haynes, John K., Jr., 4,185,051, Cl. 525-370.000.

Hegler, Ralph-Peter: *See—*
Hegler, Wilhelm; and Hegler, Ralph-Peter, 4,184,831, Cl. 425-290.000.

Hegler, Wilhelm; and Hegler, Ralph-Peter. Apparatus for producing plastic drain pipes. 4,184,831, Cl. 425-290.000.

Hehn, Bruce A. Video cassette storage container. 4,184,594, Cl. 206-387.000.

Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Wirz, Arno; and Becker, Willi, 4,184,674, Cl. 271-260.000.

Heidrich, Jochen: *See—*
Scheuermann, Fanny; Heidrich, Jochen; and Bischoff, Martin, 4,184,985, Cl. 252-522.000.

Heilman, Marlin S.: *See—*
Langer, Alois A.; Heilman, Marlin S.; Mower, Morton M.; and Mirowski, Mieczyslaw, 4,184,493, Cl. 128-419.00D.

Heimke, Gunther. Articulatory endoprostheses of nonmetallic materials. 4,184,213, Cl. 3-1.910.

Hellige GmbH: *See—*
Gunther, Alphons; Pomorin, Karl-Heinz; Spiess, Hans P.; and Ullrich, Georg J., 4,184,241, Cl. 29-278.000.

Helmes, Franciscus J., to Helmes Machinefabriek B.V. Milling machine. 4,184,525, Cl. 144-201.000.

Helmes Machinefabriek B.V.: *See—*
Helmes, Franciscus J., 4,184,525, Cl. 144-201.000.

Hemmat, Naim: *See—*
Bedell, John R.; Hemmat, Naim; and Polk, Donald E., 4,184,532, Cl. 164-64.000.

Hendrick Manufacturing Company: *See—*
Bixby, Leon C., 4,184,950, Cl. 210-73.00R.

Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See—*
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, 4,185,025, Cl. 260-406.000.
Krings, Peter; Huppertz, Josef; Reuter, Herbert; Kuhling, Dieter; Schwuger, Milan J.; and Smolka, Heinz, 4,184,975, Cl. 252-140.000.
Scheuermann, Fanny; Heidrich, Jochen; and Bischoff, Martin, 4,184,985, Cl. 252-522.000.

Henniges, Ernst, to Gummi-Henniges. Bearing brass for the journal bearings of rail vehicles. 4,184,722, Cl. 308-38.000.

Henninghaus, Ferdinand: *See—*
Henninghaus, Franz, 4,184,794, Cl. 408-57.000.

Henninghaus, Franz, to Henninghaus, Ferdinand. Device for machining the internal wall of a cylinder. 4,184,794, Cl. 408-57.000.

Henry, Michel: *See—*
Bottard, Gilles J. M.; and Henry, Michel, 4,185,190, Cl. 235-304.000.

Herbertz, Toni: *See—*
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,185,058, Cl. 264-49.000.

Herbst, LeRoy J., to General Electric Company. Dishwasher vent closing arrangement. 4,184,500, Cl. 134-114.000.

Hernandez, Albert. Motor vehicle registration card holder. 4,184,276, Cl. 40-10.00A.

Herr, John A.: *See—*
Brown, Jack; Herr, John A.; Jaffe, Wolfgang; and Peterson, Wesley R., 4,184,443, Cl. 112-225.000.

Herrera, Samuel M. Rotor aircraft. 4,184,654, Cl. 244-8.000.

Hess, Heinz; and Hausdorfer, Michael, to Robert Bosch GmbH. Method of mixing SECAM color-T.V. signals. 4,185,295, Cl. 358-22.000.

Hewlett-Packard Company: *See—*
McKim, James B., Jr.; and Rehse, Denis, 4,185,249, Cl. 330-85.000.

Heymann, Roger, to Thomson-CSF. Spray gun for a direct-vision image storage tube and an image-storage tube using this gun. 4,185,226, Cl. 315-13.0ST.

HF Systems, Incorporated: *See—*
Lintelmann, Willy; and Frey, Peter J., 4,185,278, Cl. 340-630.000.

HH-Produkter, Magnusson & Co.: *See—*
Hoije, Hugo, 4,184,928, Cl. 204-43.00Z.

Hicks, Gary D. Sun's rays reflector awning. 4,184,295, Cl. 52-64.000.

Hidaka Engineering Co., Ltd.: *See—*
Kozima, Toyoo, 4,184,355, Cl. 72-327.000.

Hill, Horace E.: *See—*
Benson, Richard L.; Hill, Horace E.; and Soderberg, Mark S., 4,184,692, Cl. 279-75.000.

Hillier, John. Safety device for ladder climbing. 4,184,568, Cl. 182-8.000.

Hinchman, Leslie R.; and Hinchman, Robert B., to Caldwell, Bessie L., a part interest. Hydraulic engine. 4,184,409, Cl. 91-347.000.

Hinchman, Robert B.: *See—*
Hinchman, Leslie R.; and Hinchman, Robert B., 4,184,409, Cl. 91-347.000.

Hinlein, Sigmund: *See*—
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; and Chastain, David, 4,185,310, Cl. 360-97.000.

Hinton, Jonathan W., to Champion Spark Plug Company. Production of ceramic articles. 4,185,061, Cl. 264-65.000.

Hirao, Takashi; Takayanagi, Shigetoshi; Onuma, Takeshi; Sugawa, Toshio; and Inoue, Kaoru, to Matsushita Electric Industrial Co., Ltd. Junction-type field effect transistor and method of making the same. 4,185,291, Cl. 357-22.000.

Hirata, Hiroshi: *See*—
Hashimoto, Nobuo; and Hirata, Hiroshi, 4,184,753, Cl. 352-140.000.

Hirschberg, Joseph G. Nonlinear optics microscope interferometer. 4,184,737, Cl. 350-13.000.

Hisaka Works, Ltd.: *See*—
Sumitomo, Hiroyuki, 4,184,542, Cl. 165-166.000.

Hitachi Cable, Ltd.: *See*—
Onoda, Seiichi; Tanaka, Toshiki P.; and Sumi, Masao, 4,184,744, Cl. 350-96.330.

Hitachi Heating Appliances Co., Ltd.: *See*—
Kaneko, Yoichi; Kimura, Katsuhiro; Watanabe, Mitsuru; Funamizu, Tadashi; and Kikuchi, Itsuo, 4,185,181, Cl. 219-10.55F.

Hitachi, Ltd.: *See*—
Itoh, Fumikazu; Sato, Mitsuo; Kamita, Nobu; Kobayashi, Takashi; and Sugimoto, Noboru, 4,184,644, Cl. 242-4.00B.
Onoda, Seiichi; Tanaka, Toshiki P.; and Sumi, Masao, 4,184,744, Cl. 350-96.330.
Tobita, Hideyuki; and Mori, Toshio, 4,184,347, Cl. 68-12.00R.

Hitachi Shipbuilding & Eng. Co., Ltd.: *See*—
Koda, Hiroyuki; Hamaya, Kunio; Yoshizaki, Hiroyuki; Kojima, Yutaka; Tsuchiya, Shiro; Fukuda, Shinichi; and Ikeno, Takashi, 4,184,911, Cl. 159-47.00R.

Hitchcock, Charles J.: *See*—
Barrington, James E.; Williams, David L.; Hitchcock, Charles J.; and Mullins, Thomas J., 4,184,258, Cl. 433-88.000.

Hitco: *See*—
Shaffer, Robert C., 4,185,043, Cl. 525-364.000.

Hiya, Kohji: *See*—
Watanabe, Sadao; Itoh, Mitsuru; Sakairi, Tadashi; Funakoshi, Yasutomo; and Hiya, Kohji, 4,185,262, Cl. 335-302.000.

Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with automatic bass chord performance device. 4,184,401, Cl. 84-1.030.

Hobbs, Oliver K. Foldable tri-section vine fluffer. 4,184,314, Cl. 56-372.000.

Hochstatter, Brian R.: *See*—
Blachly, Donald L.; Hochstatter, Brian R.; and O'Hearne, Robert L., 4,184,395, Cl. 83-486.100.

Hodges, Paul; Schaeuble, Werner J.; and Shaffer, Paul L., to International Business Machines Corporation. Error correcting system for serial by byte data. 4,185,269, Cl. 340-146.1AL.

Hoechst Aktiengesellschaft: *See*—
Ahlgrim, Michael; Mietens, Gerhard; and Zygmann, Helga, 4,184,932, Cl. 204-129.430.
Cuntze, Ulrich; Raether, Wolfgang; Reul, Bernhard; and Ross, Gerhard, 4,185,098, Cl. 424-199.000.
Dittmar, Walter; Futterer, Eberhard; and Lohaus, Gerhard, 4,185,106, Cl. 424-263.000.
Meininger, Fritz; and Springer, Hartmut, 4,185,012, Cl. 260-148.000.
Schmidbaur, Hubert; and Fuller, Hans-Jurgen, 4,185,028, Cl. 260-430.000.
Schmidt, Willi J.; and Roth, Norbert, 4,185,068, Cl. 264-284.000.
Schmitt, Karl; Hoffmann, Irmgard; and Schacht, Ulrich, 4,185,105, Cl. 424-258.000.
von der Eltz, Hans-Ulrich, 4,184,842, Cl. 8-1.00A.

Hoeg, Anthony J., Jr.: *See*—
Chang, Kenneth; Cosman, David C.; Gartner, Helmut M.; and Hoeg, Anthony J., Jr., 4,184,909, Cl. 156-643.000.

Hoeschele, Guenther K., to Du Pont de Nemours, E. I., and Company. Stabilized copolyetheresters. 4,185,003, Cl. 260-45.80N.

Hoffend, Thomas R.: *See*—
Strella, Stephen; Seanor, Donald A.; Imperial, George R.; and Hoffend, Thomas R., 4,185,140, Cl. 428-418.000.

Hoffman, Arnold: *See*—
Ames, Allan E.; Bloom, Stanley M.; Hoffman, Arnold; and Norland, Kenneth, 4,185,144, Cl. 429-156.000.

Hoffman, Arthur R., to International Business Machines Corporation. Compensation for aerodynamic drag on ink streams from a multi-nozzle ink array. 4,185,290, Cl. 346-75.000.

Hoffmann, Irmgard: *See*—
Schmitt, Karl; Hoffmann, Irmgard; and Schacht, Ulrich, 4,185,105, Cl. 424-258.000.

Hoffmann-La Roche, Inc.: *See*—
Olson, Gary L.; and Saucy, Gabriel, 4,185,154, Cl. 560-60.000.

Hogg, Walter R., to Coulter Electronics, Inc. Method and apparatus for correlating measurements of tandem sensing zones. 4,184,766, Cl. 356-72.000.

Hohman, Charles M.: *See*—
Erickson, Thomas D.; and Hohman, Charles M., 4,184,861, Cl. 65-27.000.

Hoije, Hugo, to HH-Produkter, Magnusson & Co. Method of preparing a steel surface for painting or enamelling. 4,184,928, Cl. 204-43.00Z.

Holladay, Thomas M., to Xerox Corporation. Electronic halftone screening. 4,185,304, Cl. 358-298.000.

Holmes, John F.: *See*—
United States of America, National Aeronautics and Space Administration; Holmes, John F.; and Miles, Ronald T., 4,184,368, Cl. 73-170.00A.

Holmes, Trent H.: *See*—
Brodell, Robert F.; Johnson, Robert A.; and Holmes, Trent H., 4,184,689, Cl. 277-26.000.

Holub, Robert F.: *See*—
Droullard, Robert F.; and Holub, Robert F., 4,185,199, Cl. 250-435.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Koga, Noritaka; Yoshino, Nobuo; Yoshida, Touichi; and Takasugi, Motofumi, 4,184,463, Cl. 123-75.00R.

Honecker, Guenther: *See*—
Abels, Theodor; Honecker, Guenther; and Goetz, Bernhard, 4,184,561, Cl. 180-155.000.

Honeywell Inc.: *See*—
Miller, Robert L., 4,185,315, Cl. 361-205.000.
Stauffer, Norman L., 4,184,968, Cl. 250-201.000.
Stauffer, Norman L., 4,185,191, Cl. 250-204.000.

Honeywell Information Systems Inc.: *See*—
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,185,323, Cl. 365-222.000.

Honigsbaum, Richard F. Vehicle wheel assembly having shearable tire latching rings. 4,184,531, Cl. 152-379.100.

Hooker, Donald E., to Bally Manufacturing Corp. Slot machine apparatus. 4,184,683, Cl. 273-143.00R.

Hori, Makoto: *See*—
Tanaka, Yoichi; Tsuruta, Masamichi; Takahashi, Koji; Hasegawa, Tsutomu; and Hori, Makoto, 4,184,971, Cl. 252-62.900.

Hornbaker, Edwin D.; Nugent, Adam, Jr.; and Loechelt, Cecil P., to Ethyl Corporation. Apparatus for steam stripping polyvinyl chloride resins. 4,184,924, Cl. 202-175.000.

Horton, James, to Hydril Company. Thread gage. 4,184,265, Cl. 33-199.00R.

Horwitt, Laurence G., to Sun Chemical Corporation. High-production method and apparatus for making spiral convolution electrical heating coils. 4,184,350, Cl. 72-132.000.

Horwitt, Laurence G., to Sun Chemical Corporation. High-production method and apparatus for making grooved resistance ribbon for electrical heating coils. 4,184,351, Cl. 72-132.000.

Hosaka, Shuntaro, to Toray Industries, Inc. Cross-linked alkyl methacrylate-N-vinyllactam polymer composition for use in soft contact lenses. 4,184,992, Cl. 260-29.70T.

Hosono, Hiroshi: *See*—
Shichijo, Hajime; and Hosono, Hiroshi, 4,184,446, Cl. 116-262.000.

Hosoya, Tadamichi, to Riso Kagaku Corporation. Perforating-printing device for making and using thermal stencils. 4,184,428, Cl. 101-128.400.

House Food Industrial Company Ltd.: *See*—
Sakakibara, Sakuichi; Sugisawa, Ko; Kimura, Takashi; Yasukawa, Teruo; and Matsushima, Kikuo, 4,185,125, Cl. 426-439.000.

Housman, Richard D., to J. I. Case Company. Releasable backhoe boom lock. 4,184,803, Cl. 414-694.000.

How, James C. Strings for musical instruments. 4,184,405, Cl. 84-297.00S.

Howard, Jerry B., Jr. Spark plug retainer. 4,184,592, Cl. 206-327.000.

Huang, Kwang T.; and Milner, Brian R., to United States of America, Navy. Modular guyline insulator. 4,185,161, Cl. 174-11.00R.

Hubbard, Harold C., to Motor Wheel Corporation. Hydraulic pressure transducer with electrical output. 4,184,377, Cl. 73-733.000.

Huber, Harry: *See*—
Azam, Guy; Bensussan, Andre; Levaillant, Claude; Huber, Harry; Mevel, Emile; and Tronc, Dominique, 4,184,956, Cl. 210-103.000.

Huber, Peter; and Meusel, Jurgen, to Wacker-Chemie GmbH. Aqueous polysiloxane emulsions with mica treated with organosilicon compound. 4,184,880, Cl. 106-15.050.

Hubing, James H.; and Liu, Charles C., to Texas Instruments Incorporated. Mechanically scanned antenna system. 4,185,287, Cl. 343-761.000.

Huchital, Gerald S.; and Tabanou, Jacques-Rene, to Schlumberger Technology Corporation. Apparatus and method for determination of subsurface permittivity and conductivity. 4,185,238, Cl. 324-338.000.

Hudson, Gerald E. Plug retaining device. 4,184,732, Cl. 339-75.00P.

Huebner, Wolfgang, to Siemens Aktiengesellschaft. Electrical building blocks incorporating an angular adapter and a process to manufacture the same. 4,184,730, Cl. 339-17.0LC.

Huff, Caswell L. Method for coating a textile substrate. 4,185,135, Cl. 428-96.000.

Hughes, Richard S.; and Gardner, Keith L., to United States of America, Navy. Frequency agile optical radar. 4,184,767, Cl. 356-152.000.

Hughes, Ronald H.; and Morena, Robert, to Eltra Corporation. Pitch bonded refractory. 4,184,883, Cl. 106-56.000.

Hultsch, Gunther, to Krauss-Maffei AG. Centrifuge. 4,184,964, Cl. 210-365.000.

Hung, Ling K.: *See*—
Bloom, Allen; and Hung, Ling K., 4,184,750, Cl. 350-349.000.

Huppertz, Josef: *See*—
Krings, Peter; Huppertz, Josef; Reuter, Herbert; Kuhling, Dieter; Schwuger, Milan J.; and Smolka, Heinz, 4,184,975, Cl. 252-140.000.

Hurkmans, Antonius. Dough distribution machine. 4,184,614, Cl. 222-190.000.

Hurni, Hans, to Canron, Inc. Single beam reference system for railway surveying. 4,184,266, Cl. 33-287.000.

Husky Injection Molding Systems Ltd.: *See*—
Rees, Herbert, 4,184,836, Cl. 425-588.000.
Huster, Lienhard B.; and Guggenbuhler, Max, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for the treatment of an acid hydrolysate of vegetable matter and the products obtained. 4,185,121, Cl. 426-250.000.
Hydril Company: *See*—
Horton, James, 4,184,265, Cl. 33-199.00R.
Idel, Karsten-Josef; Frietag, Dieter; and Nouvertne, Werner, to Bayer Aktiengesellschaft. Branched, high-molecular weight thermoplastic polycarbonates. 4,185,009, Cl. 260-45.90R.
Ife, Robert J.: *See*—
Brown, Thomas H.; and Ife, Robert J., 4,185,103, Cl. 424-249.000.
Iijima, Takashi; Suzuki, Taizan; Murayama, Yusuke; Nakamura, Eitaro; and Ueno, Shinji, to JGC Corporation; and Nippon Zeon Co., Ltd. Stripping column and process for removal of volatile matter. 4,184,857, Cl. 55-54.000.
Iizuka, Haruhiko, to Nissan Motor Company, Limited. EGR control system of multi-cylinder engines. 4,184,470, Cl. 123-198.00F.
Ikeda, Kenji: *See*—
Kiritani, Masaaki; Kanai, Mitsugu; Harada, Denzaburo; Nishida, Chikashi; Asanuma, Yoshiyuki; Ikeda, Kenji; and Masutani, Kouzi, 4,184,387, Cl. 74-720.500.
Ikegaya, Masashi: *See*—
Takahashi, Toshiro; and Ikegaya, Masashi, 4,184,927, Cl. 204-33.000.
Ikeno, Takashi: *See*—
Koda, Hiroyuki; Hamaya, Kunio; Yoshizaki, Hiroyuki; Kojima, Yutaka; Tsuchiya, Shiro; Fukuda, Shinichi; and Ikeno, Takashi, 4,184,911, Cl. 159-47.00R.
Illinois Railway Equipment Company: *See*—
Adler, Franklin P., 4,184,432, Cl. 105-248.000.
Illinois Tool Works Inc.: *See*—
Flair, Henry J., 4,184,264, Cl. 33-179.50C.
Imperial, George R.: *See*—
Strella, Stephen; Seanor, Donald A.; Imperial, George R.; and Hoffend, Thomas R., 4,185,140, Cl. 428-418.000.
Inagaki, Mitsuo; Sasaya, Hideaki; and Kurahashi, Takashi, to Nippon Soken, Inc. Rotary electric machine having a cooling fan. 4,184,804, Cl. 415-213.00R.
Indiana Mills & Manufacturing Inc.: *See*—
Anthony, James R.; and Lortz, Allan R., 4,184,234, Cl. 24-196.000.
Ingalls, Jeffrey D.; and Kirkhuff, Ellison H., to GTE Sylvania Incorporated. Multiple flashlamp operating circuit. 4,185,232, Cl. 315-241.00R.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,184,931, Cl. 204-129.000.
Inoue, Kaoru: *See*—
Hirao, Takashi; Takayanagi, Shigetoshi; Onuma, Takeshi; Sugawa, Toshio; and Inoue, Kaoru, 4,185,291, Cl. 357-22.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of electrolytically generating hydrogen and oxygen for use in a torch or the like. 4,184,931, Cl. 204-129.000.
Inoue, Yoshio: *See*—
Noshiro, Atsumi; Takamizawa, Minoru; and Inoue, Yoshio, 4,184,873, Cl. 430-258.000.
Institute for Industrial Research & Standards: *See*—
Anderson, Francis J., 4,185,180, Cl. 200-61.45R.
Institute of Gas Technology: *See*—
Klass, Donald L.; and Ghosh, Sambhunath, 4,184,547, Cl. 166-246.000.
Institutul de Cercetare si Proiectare Pentru Industria Electrotehnica: *See*—
Grosu, Stefan; and Preda, Vasile, 4,185,217, Cl. 310-185.000.
International Business Machines Corporation: *See*—
Chang, Kenneth; Cosman, David C.; Gartner, Helmut M.; and Hoeg, Anthony J., Jr., 4,184,909, Cl. 156-643.000.
Hatchett, Michael R.; and Rigbey, Leonard J., 4,185,314, Cl. 360-133.000.
Hodges, Paul; Schaeuble, Werner J.; and Shaffer, Paul L., 4,185,269, Cl. 340-146.1AL.
Hoffman, Arthur R., 4,185,290, Cl. 346-75.000.
Woodward, Donald R.; and Marshall John W., 4,184,630, Cl. 235-302.400.
International Harvester Company: *See*—
Beck, Harold D.; and Kolthoff, C. Paul, Jr., 4,184,541, Cl. 165-125.000.
Orth, Harold R., 4,184,334, Cl. 60-445.000.
Thiele, Werner H.; and Erickson, Vedick A., 4,184,610, Cl. 221-278.000.
International Shoe Machine Corporation: *See*—
Lindsey, William C., 4,184,219, Cl. 12-145.000.
International Standard Electric Corporation: *See*—
Bosc, Henri J., 4,185,285, Cl. 343-5.0SA.
Smernos, Stauros, 4,185,139, Cl. 428-404.000.
Vogel, Horst; and Kleiber, Herbert, 4,185,284, Cl. 343-6.80R.
Wright, Stephen, 4,184,738, Cl. 350-96.140.
International Telephone and Telegraph Corporation: *See*—
Corrales, Patrick G., 4,184,742, Cl. 350-96.210.
Du Bae, Hyung, 4,184,364, Cl. 73-54.000.
Fellinger, Frank; and Das, Santanu, 4,185,245, Cl. 328-103.000.
Maklad, Mokhtar S., 4,184,859, Cl. 65-2.000.
Inwood, Texas V.: *See*—
Ward, John W.; and Inwood, Texas V., 4,185,040, Cl. 585-467.000.
Ishidoshiro, Hiroshi: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,184,346, Cl. 68-5.00E.
Ishii, Yoshiya; Dohshita, Hidetoshi; Yamamoto, Yoshihisa; and Okazaki, Hiroshi, to Nippondenso Co., Ltd. Fuel injection system for internal combustion engine. 4,184,459, Cl. 123-32.0AE.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Koga, Minoru; and Yanagi, Yoshio, 4,185,158, Cl. 13-18.00C.
Isokinetics, Inc.: *See*—
Flavell, Evan R.; and Counsilman, James E., 4,184,678, Cl. 272-129.000.
Israel Aircraft Industries Ltd.: *See*—
Blas, Amos; and Rabin, Baruch, 4,184,899, Cl. 148-15.500.
Itado, Tadashi: *See*—
Ono, Masaharu; Kurokawa, Hirofumi; Yoshida, Kimio; Itado, Tadashi; and Uchihara, Yasuhiro, 4,184,235, Cl. 29-33.00R.
Ito, Fumio; and Yazaki, Mutsunobu, to Canon Kabushiki Kaisha. Photographic apparatus. 4,184,759, Cl. 354-86.000.
Itoh, Fumikazu; Sato, Mitsuo; Kamita, Nobu; Kobayashi, Takashi; and Sugimoto, Noboru, to Hitachi, Ltd. Winding machine. 4,184,644, Cl. 242-4.00B.
Itoh, Mitsuru: *See*—
Watanabe, Sadao; Itoh, Mitsuru; Sakairi, Tadashi; Funakoshi, Yasutomo; and Hiya, Kohji, 4,185,262, Cl. 335-302.000.
Itoh, Takaaki: *See*—
Nakamura, Norihiko; Itoh, Takaaki; and Misumi, Toshimi, 4,185,054, Cl. 261-44.00C.
Iwahashi, Hiroshi; and Suzuki, Seigo, to Tokyo Shibaura Electric Co., Ltd. Semiconductor memory with pulse controlled column load circuit. 4,185,321, Cl. 365-204.000.
Iwasaki, Taisuke; and Kikuchi, Toshihiko, to Snow Brand Milk Products Co., Ltd. Method of gelling microbial mycelia. 4,184,919, Cl. 435-175.000.
Iwase, Osamu: *See*—
Yoshihara, Ichiro; Watanabe, Tadashi; and Iwase, Osamu, 4,185,045, Cl. 525-181.000.
Izawa, Koji; Komatsu, Kouichi; and Okamura, Mitsuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Character reading system. 4,185,271, Cl. 340-146.3AG.
Izumi, Takahisa: *See*—
Yamazaki, Takayuki; Izumi, Takahisa; and Kawasaki, Hajime, 4,185,074, Cl. 422-177.000.
J. I. Case Company: *See*—
Housman, Richard D., 4,184,803, Cl. 414-694.000.
Skahill, Richard J., 4,184,712, Cl. 296-190.000.
Waite, Jerry A., 4,184,522, Cl. 141-231.000.
Jablonski, Werner: *See*—
Mallek, Heinz; and Jablonski, Werner, 4,184,437, Cl. 110-251.000.
Jacklich, John. Precision endodontic syringe. 4,184,490, Cl. 128-236.000.
Jacobson, Samuel O. Fabric clasp device. 4,184,233, Cl. 24-261.00R.
Jacques, Andre: *See*—
d'Auria, Luigi; Jacques, Andre; and Dubos, Jacques, 4,184,739, Cl. 350-96.150.
d'Auria, Luigi; Dubos, Jacques; and Jacques, Andre, 4,184,740, Cl. 350-96.160.
Jaeggi, Knut A.: *See*—
Eichenberger, Kurt; Bosshard, Hans; Buhler, Niklaus; Goschke, Richard; and Jaeggi, Knut A., 4,185,110, Cl. 424-275.000.
Jaffe, Wolfgang: *See*—
Brown, Jack; Herr, John A.; Jaffe, Wolfgang; and Peterson, Wesley R., 4,184,443, Cl. 112-225.000.
Jagoda, Neil H.; Ballas, John S.; and Kubierschky, Klaus, to American Science & Engineering, Inc. Remote load controller. 4,185,205, Cl. 307-38.000.
"Jaguar" Stahlwaren Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft: *See*—
Megna, Salvatori G.; and Pracht, Gunther, 4,184,249, Cl. 30-341.000.
James Hardie & Coy Pty. Limited: *See*—
Young, Jason C., 4,184,906, Cl. 156-299.000.
Japan Aviation Electronics Industry, Ltd.: *See*—
Suzuki, Takao; and Miyamae, Yasuo, 4,185,179, Cl. 200-44.000.
Jardine, Raymond D. Climbing aids. 4,184,657, Cl. 248-1.000.
Jarnot, Frank R., to Airlette Corporation. Flexible cover vent. 4,184,414, Cl. 98-37.000.
Jarry, Michel: *See*—
Barrilon, Eric; and Jarry, Michel, 4,185,055, Cl. 264-29.500.
Jaskolski, Stanley V.: *See*—
Lade, Robert W.; Jaskolski, Stanley V.; Spellman, Gordon B.; and Schutten, Herman P., 4,185,253, Cl. 331-66.000.
Jenkins, Byron. Foam coating of paper employing a hydrolyzed protein foaming agent. 4,184,914, Cl. 162-135.000.
Jenney, Hilas L.; and Mlay, John, Jr., to Abbott Laboratories. Nipple flow rate tester. 4,184,367, Cl. 73-37.000.
Jet Research Center, Inc.: *See*—
Mock, Wayne E., 4,184,430, Cl. 102-24.00R.
JGC Corporation: *See*—
Iijima, Takashi; Suzuki, Taizan; Murayama, Yusuke; Nakamura, Eitaro; and Ueno, Shinji, 4,184,857, Cl. 55-54.000.
Jimenez, James A., to Electra Food Machinery, Inc. Apparatus for preparing taco shells. 4,184,418, Cl. 99-353.000.
Joffre, Robert L. Devices for cleaning, dusting, mopping and applying liquid to floors. 4,184,224, Cl. 15-228.000.

Johanson, Roy W.: *See*—
Reed, Ramsey G.; and Johanson, Roy W., 4,184,826, Cl. 425-110.000.
Johns Hopkins University, The: *See*—
Murphy, John C.; and Aamodt, Leonard C., 4,184,768, Cl. 356-326.000.
Johnson, Bernard L. Solar shield. 4,184,501, Cl. 135-1.00A.
Johnson, David A.: *See*—
Sleezer, Paul D.; and Johnson, David A., 4,185,015, Cl. 260-239.100.
Johnson, Howard L., to Caterpillar Tractor Co. Low pressure signal driven flow control system. 4,184,410, Cl. 91-421.000.
Johnson & Johnson: *See*—
Rovee, David T.; Marvel, John R.; and Mezick, James A., 4,185,100, Cl. 424-240.000.
Zeitz, Vernon, 4,185,086, Cl. 424-69.000.
Johnson, June A. Adjustable quick acting vise. 4,184,668, Cl. 269-211.000.
Johnson, Paul H.: *See*—
Evans, James P., 4,184,390, Cl. 81-57.300.
Johnson, Robert A.: *See*—
Brodell, Robert F.; Johnson, Robert A.; and Holmes, Trent H., 4,184,689, Cl. 277-26.000.
Johnson, Robert B.; and Nibby, Chester M., Jr., to Honeywell Information Systems Inc. Dynamic memory system which includes apparatus for performing refresh operations in parallel with normal memory operations. 4,185,323, Cl. 365-222.000.
Johnson, Wendell J.: *See*—
Stollberg, Ray H.; Johnson, Wendell J.; and Welch, Richard O., 4,184,625, Cl. 229-23.0BT.
Joiner, Thomas R.: *See*—
Handsman, Fred B.; and Joiner, Thomas R., 4,184,763, Cl. 355-27.000.
Jones, Emrys H., Jr.; and Miller, Thomas R., to Conoco, Inc. Method for controlling direction of horizontal borehole. 4,184,553, Cl. 175-61.000.
Jones, Frank W., to Redco, Inc. Food slicer. 4,184,397, Cl. 83-874.000.
Jones, Frederick L.: *See*—
Franklin, Priscilla S.; and Jones, Frederick L., 4,184,701, Cl. 283-9.00R.
Jones, Marjorie F. Article carrying attachment for walkers. 4,184,618, Cl. 224-42.46R.
Jong, Bing W., to United States of America, Interior. Process for producing a metastable precursor powder and for producing sialon from this powder. 4,184,884, Cl. 106-73.200.
Joyner, Richard S.: *See*—
MacAdams, John L.; Wu, William C. L.; and Joyner, Richard S., 4,185,067, Cl. 264-310.000.
Juhlin, Rolf: *See*—
Blixt, Kjell G.; Tornmarck, Sven I. A.; Juhlin, Rolf; Salenstedt, Karl R.; and Tiru, Mandayam, 4,184,920, Cl. 435-19.000.
Jumpak Products, Inc.: *See*—
Fima, Raoul G., 4,185,204, Cl. 307-10.00R.
Jung, Wilhelm; and Stark, Wolfgang, to VDO Adolf Schindling AG. Device for the continuous measurement of the liquid level in a container. 4,184,369, Cl. 73-304.00C.
Jungverdorben, Hermann-Josef: *See*—
Reinehr, Uirich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, 4,185,058, Cl. 264-49.000.
Reinehr, Ulrich; and Jungverdorben, Hermann-Josef, 4,185,059, Cl. 264-51.000.
Kabanov, Alexandr V.: *See*—
Otopkov, Petr P.; Nozhkina, Alla V.; Kostikov, Valery I.; Andropov, Jury I.; Senchakov, Anatoly I.; Pesina, Anna Y.; and Kabanov, Alexandr V., 4,184,853, Cl. 51-295.000.
Kabbe, Hans-Joachim; and Roessler, Peter, to Bayer Aktiengesellschaft. Combating arthropods with 2-substituted-chroman-4-ones. 4,185,112, Cl. 424-283.000.
Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kugisawa, Toshio, 4,184,402, Cl. 84-1.260.
Kabushiki Kaisha Suwa Seikosha: *See*—
Tarusawa, Yasutaka, 4,184,321, Cl. 58-152.00R.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Ogasawara, Takeo; and Doi, Shunichi, 4,184,638, Cl. 239-418.000.
Kaczmarek, Leonard J., to Bunker Ramo Corporation. Conductor terminating apparatus. 4,184,244, Cl. 29-566.300.
Kadija, Igor V., to Olin Corporation. Diaphragms for use in the electrolysis of alkali metal chlorides. 4,184,939, Cl. 204-252.000.
Kagitani, Yoshio: *See*—
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,185,016, Cl. 260-239.30T.
Kaji, Toshihiko: *See*—
Shichijo, Hajime; Tsukatani, Masamitsu; and Kaji, Toshihiko, 4,184,447, Cl. 116-262.000.
Kaltenbach & Voigt GmbH & Co.: *See*—
Loge, Hans; and Lohn, Gerd, 4,184,256, Cl. 433-82.000.
Kamen, Melvin E.: *See*—
DeFazio, August; and Kamen, Melvin E., 4,184,292, Cl. 51-235.000.
Kamimoto, Yoshiyuki, to Toyo Aluminum K.K. Induction heating apparatus with adjustable flux concentrators. 4,185,183, Cl. 219-10.61R.
Kamio, Nobuyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Tubular incandescent lamp. 4,185,219, Cl. 313-279.000.
Kamita, Nobu: *See*—
Itoh, Fumikazu; Sato, Mitsuo; Kamita, Nobu; Kobayashi, Takashi; and Sugimoto, Noboru, 4,184,644, Cl. 242-4.00B.
Kamiyama, Yasuo: *See*—
Kanda, Nobuyuki; and Kamiyama, Yasuo, 4,184,317, Cl. 58-90.00R.
Kanai, Mitsugu: *See*—
Kiritani, Masaaki; Kanai, Mitsugu; Harada, Denzaburo; Nishida, Chikashi; Asanuma, Yoshiyuki; Ikeda, Kenji; and Masutani, Kouzi, 4,184,387, Cl. 74-720.500.
Kanayama, Shigehiro: *See*—
Yamauchi, Toshiro; Saito, Takemi; and Kanayama, Shigehiro, 4,185,297, Cl. 358-55.000.
Kanda, Nobuyuki; and Kamiyama, Yasuo, to Citizen Watch Co., Ltd. Watch movement mounting structure. 4,184,317, Cl. 58-90.00R.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Ohashi, Takehisa; Takahashi, Satomi; and Yoneda, Koji, 4,185,153, Cl. 548-309.000.
Kaneko, Yoichi; Kimura, Katsuhiro; Watanabe, Mitsuru; Funamizu, Tadashi; and Kikuchi, Itsuo, to Hitachi Heating Appliances Co., Ltd. Microwave oven. 4,185,181, Cl. 219-10.55F.
Kansai Paint Company, Limited: *See*—
Yoshihara, Ichiro; Watanabe, Tadashi; and Iwase, Osamu, 4,185,045, Cl. 525-181.000.
Kansas State University Research Foundation: *See*—
Brockman, Helen L., 4,184,260, Cl. 33-15.000.
Kantarian, Edward T.; and Staub, Donald F. Conveyor load stop and release apparatus. 4,184,579, Cl. 193-35.00A.
Karami, Hamzeh, to Colgate-Palmolive Company. Method of making an absorbent article. 4,184,902, Cl. 156-85.000.
Karasudani, Yasuo, to Tokico Ltd. Disc Brake. 4,184,571, Cl. 188-72.700.
Karayannis, Nicholas M.; Khelghatian, Habet M.; and Skryantz, John S., to Standard Oil Company (Indiana). Stabilizing additives for polyolefins. 4,184,987, Cl. 260-23.00H.
Karl Lautenschlager KG, Mobelbeschlagfabrik: *See*—
Lautenschlager, Karl; and Lautenschlager, Gerhard, 4,184,228, Cl. 16-86.00A.
Karl Storz Endoscopy-America, Inc.: *See*—
Meinke, Hans H.; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lidenmeier, Heinz, 4,184,492, Cl. 128-303.140.
Karll, Bent: *See*—
Dyhr, Jan; Karll, Bent; and Andersen, Hans C., 4,184,810, Cl. 417-363.000.
Karrer, Friedrich: *See*—
Rasberger, Michael; and Karrer, Friedrich, 4,185,007, Cl. 260-45.80N.
Kaseta, Robert; Daugherty, Lenn; Hinlein, Sigmund; and Chastain, David, to Data General Corporation. Cooling apparatus for spinning magnetic disc memory apparatus. 4,185,310, Cl. 360-97.000.
Kashio, Toshio, to Casio Computer Co., Ltd. Electronic stop watches. 4,184,320, Cl. 58-74.000.
Kasper, Gordon, to Ruskin Manufacturing Company. Vacuum relief and access door assembly. 4,184,509, Cl. 137-526.000.
Kataoka, Hiroshi. Device for wrapping the ends of rolls. 4,184,307, Cl. 53-380.000.
Kathawala, Faizulla G., to Sandoz, Inc. Benzocycloalkylamides. 4,185,118, Cl. 424-324.000.
Kato, Masashi. Sewage treatment with nested short tube contact media. 4,184,946, Cl. 210-14.000.
Kato, Minoru; and Nagasawa, Masao, to Nippondenso Co., Ltd. Contactless ignition system for internal combustion engine. 4,184,467, Cl. 123-148.00E.
Katz, Hugh S.; and Garrett, Anthony N., to LVK Associates, Inc. Hospital furniture. 4,184,724, Cl. 312-209.000.
Kaufer, Wilhelm: *See*—
Gebauer, Peter; Kaufer, Wilhelm; and Mohrke, Helmut, 4,185,000, Cl. 260-42.270.
Kaufmann, Peter: *See*—
Eberlin, Helmut; Halada, Karl R.; and Kaufmann, Peter, 4,184,354, Cl. 72-250.000.
Kawaguchi, Nobuo: *See*—
Kikuchi, Hiroyuki; Kawaguchi, Nobuo; and Shiokawa, Hideaki, 4,185,119, Cl. 424-258.000.
Kawamura, Akinobu. Device for collecting oil floating on the surface of water. 4,184,527, Cl. 150-1.000.
Kawasaki, Hajime: *See*—
Yamazaki, Takayuki; Izumi, Takahisa; and Kawasaki, Hajime, 4,185,074, Cl. 422-177.000.
Kawashima, Isao: *See*—
Omura, Yoshimoto; Hara, Hideo; Kawashima, Isao; Sekiguchi, Keisuke; and Shino, Kuninori, 4,184,688, Cl. 274-15.00R.
Kawneer Company, Inc.: *See*—
Redman, Ronald E., 4,184,382, Cl. 74-522.000.
Keihoku Seiki Manufacturing Company: *See*—
Ozeki, Jiro, 4,184,754, Cl. 353-27.00R.
Kelley, Zar W., to Beck, Louis. Diaphragm pump construction having pulsator piston and mechanically actuated means to supply pulsator fluid. 4,184,809, Cl. 417-360.000.
Kelly, Kenneth M.: *See*—
Pulliam, James B.; Pulliam, Fred L.; and Kelly, Kenneth M., 4,184,474, Cl. 126-121.000.
Kennedy, Edmund E.: *See*—
Atkinson, Lowell G.; and Kennedy, Edmund E., 4,185,240, Cl. 325-25.000.

Kenny, Neal S., to Corning Glass Works. Vacuum window for solar transmission. 4,184,480, Cl. 126-450.000.
Kenworthy, E. J. Doyle, to Mead Corporation, The. Solid metal orifice plate for a jet drop recorder. 4,184,925, Cl. 204-11.000.
Kerman, Stephen E.; Hamatani, Fumikazu; Tsutsumi, Fumio; and Tanaka, Yuji, to Nippon Tsu Shin Kogyo K.K.; and TIE/Communications, Inc. Key telephone call signalling circuit. 4,185,173, Cl. 179-99.00P.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Mallek, Heinz; and Jablonski, Werner, 4,184,437, Cl. 110-251.000.
Zimmer, Erich, 4,184,976, Cl. 252-301.10S.
Kerr Addison Mines Ltd.: *See—*
Crawshay, Richard; and Rowswell, Malcolm D., 4,184,581, Cl. 198-308.000.
Kessler, Thomas R.: *See—*
Kolff, Willem J.; and Kessler, Thomas R., 4,184,497, Cl. 131-213.00A.
Khelghatian, Habet M.: *See—*
Karayannis, Nicholas M.; Khelghatian, Habet M.; and Skryantz, John S., 4,184,987, Cl. 260-23.00H.
Khoury, Nick S., to Continental Group, Inc., The. Child resistant pull tab. 4,184,606, Cl. 220-270.000.
Kikuchi, Hiroyuki; Kawaguchi, Nobuo; and Shiokawa, Hideaki, to Fujisawa Pharmaceutical Co., Ltd. Antiallergic methods. 4,185,119, Cl. 424-258.000.
Kikuchi, Itsuo: *See—*
Kaneko, Yoichi; Kimura, Katsuhiro; Watanabe, Mitsuru; Funamizu, Tadashi; and Kikuchi, Itsuo, 4.185,181, Cl. 219-10.55F.
Kikuchi, Toshihiko: *See—*
Iwasaki, Taisuke; and Kikuchi, Toshihiko, 4,184,919, Cl. 435-175.000.
Killian, Bruce A., to Bendix Corporation, The. Termination and method of terminating ropes or cables of aramid fiber or the like. 4,184,784, Cl. 403-267.000.
Killy, Earl J.: *See—*
Graser, Earl J.; and Killy, Earl J., 4,184,626, Cl. 229-40.000.
Kim, Sunyong P. Hatchback station wagon with adjustable roof panel. 4,184,709, Cl. 296-137.00B.
Kimata, Kei; Yasuda, Yoshinobu; Yoshida, Isamu; and Saruta, Masahiro, to NTN Toyo Bearing Co., Ltd. Fuel flow rate measuring device. 4,184,505, Cl. 137-117.000.
Kimata, Kei: *See—*
Nakazeki, Tugito; Kimata, Kei; Fukunaga, Syoichi; Kuroiwa, Takashi; and Morii, Seiji, 4,184,465, Cl. 123-139.0AW.
Kimes, Richard C.: *See—*
Tolbert, William R.; Feder, Joseph; and Kimes, Richard C., 4,184,916, Cl. 435-241.000.
Kimura, Katsuhiro: *See—*
Kaneko, Yoichi; Kimura, Katsuhiro; Watanabe, Mitsuru; Funamizu, Tadashi; and Kikuchi, Itsuo, 4,185,181, Cl. 219-10.55F.
Kimura, Takashi: *See—*
Sakakibara, Sakuichi; Sugisawa, Ko; Kimura, Takashi; Yasukawa, Teruo; and Matsushima, Kikuo, 4,185,125, Cl. 426-439.000.
Kinard, Richard D.: *See—*
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., 4,185,130, Cl. 427-47.000.
Kinch, Frederick A., Jr.; and Morgan, Barrie O., to Datotek, Inc. Multi-mode digital enciphering system. 4,185,166, Cl. 178-22.000.
King, James P.: *See—*
Gillman, Hyman D.; and King, James P., 4,185,031, Cl. 260-502.40R.
King, Leroy A., Jr., to Tighe Industries. Feminine performance costume garment. 4,184,494, Cl. 128-519.000.
Kinkel, Richard L., to Fiber Industries, Inc. Conductive sheath/core heterofilament. 4,185,137, Cl. 428-372.000.
Kinney, Alfred W., to Phillips Petroleum Company. Apparatus for combining a plurality of viscous streams to form a patterned product. 4,184,613, Cl. 222-145.000.
Kirch, William; and Thompson, Paul A., to Chemplex Company. Catalyst and process of preparing the catalyst. 4,184,979, Cl. 252-430.000.
Kirchweger, Karl; Thien, Gerhard; and Fachbach, Heinz, to List, Hans. Sound proof encapsulated engine, especially an internal combustion engine. 4,184,471, Cl. 123-198.00E.
Kiritani, Masaaki; Kanai, Mitsugu; Harada, Denzaburo; Nishida, Chikashi; Asanuma, Yoshiyuki; Ikeda, Kenji; and Masutani, Kouzi, to Kubota, Ltd. Vehicle for civil engineering work. 4,184,387, Cl. 74-720.500.
Kirkhuff, Ellison H.: *See—*
Ingalls, Jeffrey D.; and Kirkhuff, Ellison H., 4,185,232, Cl. 315-241.00R.
Kiscaden, Roy W.; Martz, Lyle F.; and Uram, Robert, to Westinghouse Electric Corp. Combined cycle electric power plant with coordinated plural feedback turbine control. 4,184,324, Cl. 60-39.18B.
Kitamura, Kazuo: *See—*
Suzuki, Ichiro; Kitamura, Kazuo; Wakimoto, Nobuo; and Watanabe, Hiroyuki, 4,184,697, Cl. 280-660.000.
Klass, Donald L.; and Ghosh, Sambhunath, to Institute of Gas Technology. Situ mining of fossil fuel containing inorganic matrices. 4,184,547, Cl. 166-246.000.
Kleiber, Herbert: *See—*
Vogel, Horst; and Kleiber, Herbert, 4,185,284, Cl. 343-6.80R.
Klein, Robert E.: *See—*
Bailey, David C.; and Klein, Robert E., 4,184,764, Cl. 355-54.000.
Kleine, Charles A.; and Middleton, Verne L., to Olin Corporation. Heat exchanger exhibiting improved mechanical and thermal stability. 4,184,543, Cl. 165-170.000.
Klockner-Humboldt-Deutz AG: *See—*
Ellingen, Karl; and Gaumert, Wolfgang, 4,184,886, Cl. 106-100.000.
Klug, Frederic J.: *See—*
Pasco, Wayne D.; and Klug, Frederic J., 4,184,885, Cl. 106-73.400.
Kmita, Anatoly M.: *See—*
Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M., 4,185,218, Cl. 310-313.000.
Knazek, Richard A.; Gullino, Pietro M.; and Frankel, David S., to United States of America, United States. Dual circuit, woven artificial capillary bundle for cell culture. 4,184,922, Cl. 435-284.000.
Kneer, Franz X., to Gebruder Weiss KG. Apparatus for aerating organic waste material. 4,184,269, Cl. 34-168.000.
Knipp, Ulrich; and Vente, Paul, to Bayer Aktiengesellschaft. Process for manufacturing tire segments. 4,185,065, Cl. 264-254.000.
Knochelmann, Carl E., Jr.: *See—*
Griffin, Noel J.; Miller, Larry D.; Squire, Gerald K.; and Knochelmann, Carl E., Jr., 4,185,265, Cl. 340-32.000.
Knox, Lloyd C.: *See—*
Streich, Steven G.; Knox, Lloyd C.; and Sullaway, Bob L., 4,184,515, Cl. 138-89.000.
Knusel, Fritz; Nuesch, Jakob; Peter, Heinrich; and Rosselet, Armel, to Ciba-Geigy Corporation. Use of avilamycin as a feed additive. 4,185,091, Cl. 424-118.000.
Kobayashi, Takashi: *See—*
Itoh, Fumikazu; Sato, Mitsuo; Kamita, Nobu; Kobayashi, Takashi; and Sugimoto, Noboru, 4,184,644, Cl. 242-4.00B.
Kobilan, Errol. Berry and fruit picking container. 4,184,528, Cl. 150-2.000.
Koda, Hiroyuki; Hamaya, Kunio; Yoshizaki, Hiroyuki; Kojima, Yutaka; Tsuchiya, Shiro; Fukuda, Shinichi; and Ikeno, Takashi, to Mitsubishi Gas Chemical Company; and Hitachi Shipbuilding & Eng. Co., Ltd. Process for producing powdery polycarbonate from a polycarbonate solution. 4,184,911, Cl. 159-47.00R.
Koga, Minoru; and Yanagi, Yoshio, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Apparatus for electric furnace capable of effecting electrode connection and refractory lining repairs independently of each other. 4,185,158, Cl. 13-18.00C.
Koga, Noritaka; Yoshino, Nobuo; Yoshida, Touichi; and Takasugi, Motofumi, to Honda Giken Kogyo Kabushiki Kaisha. Internal-combustion engine. 4,184,463, Cl. 123-75.00R.
Kohan Sendan Kikai Kabushiki Kaisha: *See—*
Nagata, Toshio, 4,185,261, Cl. 335-291.000.
Koires, Vladimir I.: *See—*
Gorlitsin, Sergei N.; Koires, Vladimir I.; and Sokolov, Alexandr I., 4,184,358, Cl. 72-462.000.
Kojima, Yutaka: *See—*
Koda, Hiroyuki; Hamaya, Kunio; Yoshizaki, Hiroyuki; Kojima, Yutaka; Tsuchiya, Shiro; Fukuda, Shinichi; and Ikeno, Takashi, 4,184,911, Cl. 159-47.00R.
Kolb, Alfred; and Lahme, Karl. Device for determining the exact position of two members linearly displaceable relative to each other. 4,184,262, Cl. 33-125.00R.
Kolesov, Vladimir M.: *See—*
Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.
Kolff, Willem J.; and Kessler, Thomas R., to University of Utah. Peritoneal dialysis catheter. 4,184,497, Cl. 131-213.00A.
Kolling, Georg: *See—*
Handrick, Kurt; Kolling, Georg; Linden, Clemens; and Droll, Gunter, Jr., 4,185,023, Cl. 260-369.000.
Handrick, Kurt; Kolling, Georg; and Linden, Clemens, 4,185,024, Cl. 260-369.000.
Kolthoff, C. Paul, Jr.: *See—*
Beck, Harold D.; and Kolthoff, C. Paul, Jr., 4,184,541, Cl. 165-125.000.
Komatsu, Kouichi: *See—*
Izawa, Koji; Komatsu, Kouichi; and Okamura, Mitsuyoshi, 4,185,271, Cl. 340-146.3AG.
Komatsu, Nobuhiko: *See—*
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,185,016, Cl. 260-239.30T.
Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH: *See—*
Eckle, Otto, 4,184,391, Cl. 82-1.200.
Kommanditbolaget Kockums Chemical AB & Co.: *See—*
Blixt, Kjell G.; Tornmarck, Sven I. A.; Juhlin, Rolf; Salenstedt, Karl R.; and Tiru, Mandayam, 4,184,920, Cl. 435-19.000.
Kondo, Dennis; and Colombo, Michael. Cushioned extension for telephone earpiece. 4,185,175, Cl. 179-182.00R.
Kondo, Hiroyuki, to Aisin Seiki Kabushiki Kaisha. Control valve assembly for hydraulic brakes. 4,184,716, Cl. 303-6.00C.
Kondo, Takashi, to Minolta Camera Kabushiki Kaisha. Exposure servo-control device for cameras. 4,184,757, Cl. 354-43.000.
Konnan, Yehuda A. Four in hand necktie with integral clasp. 4,184,231, Cl. 24-49.00R.
Kool-Ray Ltd.: *See—*
Deschamps, Leo F., 4,184,300, Cl. 52-473.000.
Koontz, Bryce L. Combination thermal insulation stop and ventilation baffle article. 4,184,416, Cl. 98-37.000.

Kostikov, Valery I.: *See*—
Otopkov, Petr P.; Nozhkina, Alla V.; Kostikov, Valery I.; Andropov, Jury I.; Senchakov, Anatoly I.; Pesina, Anna Y.; and Kabanov, Alexandr V., 4,184,853, Cl. 51-295.000.

Kostov, Kosta M.: *See*—
Vassilev, Grigor D.; Yordanov, Zdravko A.; Stoyanov, Lyubomir A.; Ralev, Rali V.; and Kostov, Kosta M., 4,184,363, Cl. 73-61.10R.

Koyama, Michinori: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Saino, Tetsushi; and Koyama, Michinori, 4,185,156, Cl. 562-440.000.

Kozak, Otto. Anti-corrosive coating on magnesium and its alloys. 4,184,926, Cl. 204-32.00R.

Kozima, Toyoo, to Hidaka Engineering Co., Ltd. Method and a punch/die assembly for the production of heat exchanger fins. 4,184,355, Cl. 72-327.000.

Kozinski, Allen A., to Quaker Oats Company, The. Furfuryl alcohol production process. 4,185,022, Cl. 260-347.800.

Kraess, Henri: *See*—
Beyhurst, Desire; Bronner, Jean-Jacques; Fuhrer, Jean-Claude; and Kraess, Henri, 4,185,174, Cl. 179-175.20R.

Kraft, Inc.: *See*—
Wolf, Raymond M., 4,184,825, Cl. 425-85.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Gemein, Rudolf; and Pessel, Erich, 4,184,721, Cl. 308-9.000.

Krasnobajew, Victor; and Boeniger, Regula, to Givaudan Corporation. Novel condensation products having high activity to insolubilize proteins and protein-insolubilized products. 4,184,986, Cl. 260-6.000.

Kraus, Hans J., to Dentaurum Hans-Peter Winkelstroeter KG. Process of electro-eroding channels in multiple buccal tube device. 4,184,254, Cl. 433-17.000.

Krauss-Maffei AG: *See*—
Hultsch, Gunther, 4,184,964, Cl. 210-365.000.

Krauss, Werner, to Claudius Peters, AG. Silo for bulk material. 4,184,774, Cl. 366-107.000.

Krawchuk, Myron T.: *See*—
Schroeder, Joseph W.; and Krawchuk, Myron T., 4,184,243, Cl. 29-427.000.

Krejci, Milan; and Kresse, Peter, to Bayer Aktiengesellschaft. Production of coated structural elements comprising inorganic binders. 4,185,141, Cl. 428-446.000.

Kresse, Peter: *See*—
Krejci, Milan; and Kresse, Peter, 4,185,141, Cl. 428-446.000.

Kreuzburg, Gerhard; Lenz, Arnold; and Rogler, Walter, to Dynamit Nobel Aktiengesellschaft. Method of preparing orthosilicic acid alkyl esters. 4,185,029, Cl. 260-448.80A.

Krings, Peter; Huppertz, Josef; Reuter, Herbert; Kuhling, Dieter; Schwuger, Milan J.; and Smolka, Heinz, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Pourable agglomerated aluminosilicate builder compositions for washing and cleansing agents. 4,184,975, Cl. 252-140.000.

Krofta, Milos, to Lenox Institute for Research, Inc. Apparatus for clarifying waste water. 4,184,967, Cl. 210-525.000.

Krol, Arthur J.; and Pablos, Tomas C., to Krol, Arthur J. Overdenture and method for securing same. 4,184,252, Cl. 433-172.000.

Kropa, Gomer E.: *See*—
Buchan, Walter; Kropa, Gomer E.; and Winiarski, Edward J., 4,184,833, Cl. 425-311.000.

Kruger & Co. KG: *See*—
Wilhelm, Wolfgang, 4,185,280, Cl. 340-685.000.

Kruse, Robert L.; and Peng, Fred M., to Monsanto Company. Mass polymerization process for polyblends. 4,185,049, Cl. 525-84.000.

Kubek, Daniel J.: *See*—
Butwell, Kenneth F.; and Kubek, Daniel J., 4,184,855, Cl. 55-48.000.

Kubierschky, Klaus: *See*—
Jagoda, Neil H.; Ballas, John S.; and Kubierschky, Klaus, 4,185,205, Cl. 307-38.000.

Kuboki, Tamotsu. Instrument for processing artificial teeth and the like. 4,184,251, Cl. 433-29.000.

Kubota, Ltd.: *See*—
Kiritani, Masaaki; Kanai, Mitsugu; Harada, Denzaburo; Nishida, Chikashi; Asanuma, Yoshiyuki; Ikeda, Kenji; and Masutani, Kouzi, 4,184,387, Cl. 74-720.500.

Kuceski, Vincent P., to C. P. Hall Company, The. Production of polyamides from dicarboxylic acids produced by nitric acid oxidation of organic material. 4,185,150, Cl. 528-336.000.

Kucharewski, Nicholas, to RCA Corporation. Electrical circuits. 4,185,211, Cl. 307-351.000.

Kuge, Tsukasa; Matsumoto, Toru; Watanabe, Tsuyoshi; and Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Method for developing electrostatic latent images and removal of excess developer. 4,185,129, Cl. 430-120.000.

Kugisawa, Toshio, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,184,402, Cl. 84-1.260.

Kugler, Hans-Peter; and Eisenreich, Norbert. Device for expanding practically parallel light rays. 4,184,748, Cl. 350-190.000.

Kuhling, Dieter: *See*—
Krings, Peter; Huppertz, Josef; Reuter, Herbert; Kuhling, Dieter; Schwuger, Milan J.; and Smolka, Heinz, 4,184,975, Cl. 252-140.000.

Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Cationic dyestuffs. 4,185,151, Cl. 546-167.000.

Kuhn, Joachim: *See*—
Eckmayer, Zdenek; Berg, Alexander; and Kuhn, Joachim, 4,185,011, Cl. 260-123.700.

Kulischenko, Walter; and Ellis, William C., to Pennwalt Corporation. Power driven flexible shaft clutch assembly. 4,184,576, Cl. 192-41.00R.

Kullman, William G.: *See*—
Morgan, Thomas J.; Marfatia, Anil; and Kullman, William G., 4,184,945, Cl. 219-10.55D.

Kumata, Kiyoshi, to Sharp Kabushiki Kaisha. Digital display type electronic time piece. 4,184,319, Cl. 58-50.00R.

Kunz, Peter, to Mettler Instrumente AG. Balance with electromagnetic compensation. 4,184,556, Cl. 177-210.0EM.

Kunz, Peter, to Mettler Instrumente AG. Top loading balance. 4,184,557, Cl. 177-229.000.

Kurahashi, Takashi: *See*—
Inagaki, Mitsuo; Sasaya, Hideaki; and Kurahashi, Takashi, 4,184,804, Cl. 415-213.00R.

Kurihara, Toshio; Mizutani, Nagao; and Ohkawara, Yasuo, to Citizen Watch Co., Ltd. Printer. 4,184,780, Cl. 400-56.000.

Kuroiwa, Takashi: *See*—
Nakazeki, Tugito; Kimata, Kei; Fukunaga, Syoichi; Kuroiwa, Takashi; and Morii, Seiji, 4,184,465, Cl. 123-139.0AW.

Kurokawa, Hirofumi: *See*—
Ono, Masaharu; Kurokawa, Hirofumi; Yoshida, Kimio; Itado, Tadashi; and Uchihara, Yasuhiro, 4,184,235, Cl. 29-33.00R.

Kuronen, John M.: *See*—
Parks, Howard L.; and Kuronen, John M., 4,184,729, Cl. 339-17.00F.

Kushner, Gerald J.; and Raleigh, Edward, to General Electric Company. Disconnectable coupling for a split system air conditioner. 4,184,661, Cl. 251-82.000.

La Telephone Industrielle et Commerciale-Telic: *See*—
Beyhurst, Desire; Bronner, Jean-Jacques; Fuhrer, Jean-Claude; and Kraess, Henri, 4,185,174, Cl. 179-175.20R.

LaBarre, Ronald L.: *See*—
Solomon, Frank; Lieb, Donald F.; and LaBarre, Ronald L., 4,185,142, Cl. 429-49.000.

Laboratoire Spad: *See*—
Ducos, Jacques; and Duprez, Jean-Pierre, 4,184,879, Cl. 106-35.000.

Lackner, Anne M.; and Reif, Phillip G., to United States of America, Navy. Method for polishing cadmium sulfide semiconductors. 4,184,908, Cl. 156-636.000.

Lade, Robert W.; Jaskolski, Stanley V.; Spellman, Gordon B.; and Schutten, Herman P., to Eaton Corporation. Temperature sensitive relaxation oscillator. 4,185,253, Cl. 331-66.000.

Ladney, Michael, Jr. Method of manufacturing structural foam plastic products free from undesirable contaminant constituents. 4,185,060, Cl. 264-54.000.

Laeis-Werke AG: *See*—
Arndt, Moritz, 4,184,799, Cl. 414-54.000.

Lagodka, Gunter: *See*—
Becker, Kunibert; Elsner, Burghardt; and Lagodka, Gunter, 4,184,791, Cl. 405-291.000.

Lahme, Karl: *See*—
Kolb, Alfred; and Lahme, Karl, 4,184,262, Cl. 33-125.00R.

Laitram Corporation, The: *See*—
Lapeyre, James M., 4,184,588, Cl. 198-778.000.

Lala, Louis A.: *See*—
Bubley, Henry J.; Lala, Louis A.; and Taylor, Hillman W., 4,184,427, Cl. 101-123.000.

Lalk, James W.: *See*—
Ginter, Thomas O.; and Lalk, James W., 4,185,128, Cl. 427-390.00R.

Lamberti, John, to Benedetto, Joseph, a part interest. Water wave energy transducer. 4,184,336, Cl. 60-507.000.

Lambertson, William A., to Perey Manufacturing Co., Inc. Twin-gate type turnstile. 4,184,289, Cl. 49-42.000.

Lambrecht, Richard A., to Union Carbide Corporation. Anode and cathode lead wire assembly for solid electrolytic capacitors. 4,185,317, Cl. 361-433.000.

Lamke, Arland D.: *See*—
Gilker, Clyde; and Lamke, Arland D., 4,185,177, Cl. 200-17.00R.

Land, Edwin H., to Polaroid Corporation. Translucent screen. 4,184,745, Cl. 350-126.000.

Land, Edwin H.; and Biber, Conrad H., to Polaroid Corporation. Strobe without primary storage capacitor. 4,184,756, Cl. 354-33.000.

Landgraf, Helmut; and Lange, Klaus, to Mannesmann Aktiengesellschaft. Roller track for pipes. 4,184,839, Cl. 432-124.000.

Landstorfer, Friedrich: *See*—
Meinke, Hans H.; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lidenmeier, Heinz, 4,184,492, Cl. 128-303.140.

Lanfermann, Willy, to Gebr. Eickhoff, Maschinenfabrik und Eisengieserei m.b.H. Rack device for a drum cutter mining machine. 4,184,715, Cl. 299-43.000.

Lange, Frederick F., to Westinghouse Electric Corp. Silicon nitride-silicon carbide composite material. 4,184,882, Cl. 106-44.000.

Lange, Klaus: *See*—
Landgraf, Helmut; and Lange, Klaus, 4,184,839, Cl. 432-124.000.

Lange, Robert G.; and Schlotthauer, Harley L., to United States Gypsum Company. Plaster composition containing water-reducing agent. 4,184,887, Cl. 106-111.000.

Langen, Marinus J. M.; and Strauss, Edgar H., to H. J. Langen & Sons Ltd. Apparatus for manufacturing a bag and delivering a bag in an open configuration to a check-out counter. 4,184,413, Cl. 93-19.000.

Langer, Alois A.; Heilman, Marlin S.; Mower, Morton M.; and Mirowski, Mieczyslaw, to Mirowski, Mieczyslaw. Circuit for monitoring a

heart and for effecting cardioversion of a needy heart. 4,184,493, Cl. 128-419.00D.

Lapeyre, James M., to Laitram Corporation, The. Product transport conveyor system. 4,184,588, Cl. 198-778.000.

Larin, Gennady P.: *See—*
Mushenko, Nikolai Y.; Larin, Gennady P.; Seredenko, Vladimir P.; and Svetikov, Ivan P., 4,184,637, Cl. 239-419.300.

Larin, Jean, to Emboss-O-Prestige LTEE. Lockable name plate. 4,184,277, Cl. 40-10.00R.

Latos, Edwin J.: *See—*
Putz, Patricia J.; Lishka, Marie A.; and Latos, Edwin J., 4,184,983, Cl. 252-466.0PT.

Laughlin, James P.; and Eisenbrandt, Gerald A., to Whirlpool Corporation. Temperature sensor mounting means. 4,184,340, Cl. 62-129.000.

Laughlin, John R., to Park-Ohio Industries, Inc. Workpiece rotating and feeding apparatus. 4,184,798, Cl. 414-16.000.

Lauritsen, Richard L.: *See—*
Comerford, John; and Lauritsen, Richard L., 4,184,381, Cl. 74-471.0XY.

Lautenschlager, Gerhard: *See—*
Lautenschlager, Karl; and Lautenschlager, Gerhard, 4,184,228, Cl. 16-86.00A.

Lautenschlager, Karl; and Lautenschlager, Gerhard, to Karl Lautenschlager KG, Mobelbeschlagfabrik. Quadruple knuckle joint cabinet hinge. 4,184,228, Cl. 16-86.00A.

Lazear, Nelson R.; and Stackman, Robert W., to Celanese Corporation. Pressure sensitive adhesive compositions comprising a mixture of terpolymers. 4,185,050, Cl. 525-221.000.

Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull. Device for reading information magnetically coded on a carrier. 4,184,631, Cl. 235-449.000.

Lear Siegler, Inc.: *See—*
Pareja, Ramon, 4,184,817, Cl. 417-539.000.

Leavens, Dwight E.: *See—*
Smith, Gary W.; Leavens, Dwight E.; and Sims, Louis R., 4,185,026, Cl. 260-412.500.

Leber, Jean-Pierre, to Sandoz Ltd. Process for thiophosphoric acid derivatives. 4,185,052, Cl. 260-972.000.

Lebetzki, Egon: *See—*
Schneider, Hartmut; and Lebetzki, Egon, 4,184,860, Cl. 65-3.00A.

Leco Corporation: *See—*
Reed, Ramsey G.; and Johanson, Roy W., 4,184,826, Cl. 425-110.000.

Lederer, Edgar: *See—*
Derrien, Marcel; Lederer, Edgar; Audibert, Francoise M.; Chedid, Louis; Choay, Jean; and Lefrancier, Pierre, 4,185,089, Cl. 424-88.000.

Leek, Adrian E.: *See—*
Cambiaso, Cesar L.; de Steenwinkel, Floris; Leek, Adrian E.; and Masson, Pierre L., 4,184,849, Cl. 23-230.00B.

Leesona Corporation: *See—*
Buchan, Walter; Kropa, Gomer E.; and Winiarski, Edward J., 4,184,833, Cl. 425-311.000.
Cuff, David W., 4,184,832, Cl. 425-308.000.

Le Foll, Francois: *See—*
Gauthier, Michel; Le Foll, Francois; and Charles, Christian, 4,184,583, Cl. 198-703.000.

Lefrancier, Pierre: *See—*
Derrien, Marcel; Lederer, Edgar; Audibert, Francoise M.; Chedid, Louis; Choay, Jean; and Lefrancier, Pierre, 4,185,089, Cl. 424-88.000.

Leger, Andre: *See—*
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,185,107, Cl. 424-263.000.

Leidich, Arthur J., to RCA Corporation. Level shifting circuit. 4,185,212, Cl. 307-362.000.

Leinfelt, Karl E., to Aktiebolaget Electrolux. Vacuum cleaner dust bag and motor disconnect device. 4,184,225, Cl. 15-339.000.

Lemmers, Eugene: *See—*
Riesland, David H.; Hammer, Edward E.; and Lemmers, Eugene, 4,185,233, Cl. 315-276.000.

Lenberg, Rustan. Compass having a course directing pointer. 4,184,267, Cl. 33-349.000.

Lenox Institute for Research, Inc.: *See—*
Krofta, Milos, 4,184,967, Cl. 210-525.000.

Lenz, Arnold: *See—*
Kreuzburg, Gerhard; Lenz, Arnold; and Rogler, Walter, 4,185,029, Cl. 260-448.80A.

Leonard, Henri, to Micro-Mega S.A. Dental handpiece. 4,184,257, Cl. 433-82.000.

Leonard, Regis J., Jr., to Bethlehem Steel Corporation. Method for using flux and slag deoxidizer in ESR process. 4,184,869, Cl. 75-10.00C.

Lespagnol, Charles: *See—*
Baille-Barrelle, Henri; Vigneron, Maurice; and Lespagnol, Charles, 4,185,114, Cl. 424-301.000.

Leung, Chun K., to Bendix Corporation, The. Acceleration enrichment for closed loop control systems. 4,184,461, Cl. 123-32.0EH.

Levaillant, Claude: *See—*
Azam, Guy; Bensussan, Andre; Levaillant, Claude; Huber, Harry; Mevel, Emile; and Tronc, Dominique, 4,184,956, Cl. 210-103.000.

Levefelt, Bert G., to Sandvik Aktiebolag. Check valve for rock drill. 4,184,554, Cl. 175-317.000.

Levina, Margarita Y.: *See—*
Butseniex, Imant E.; Levina, Margarita Y.; Prostyakov, Alexandr A.; Stolov, Mikhail Y.; Sharamkin, Vladimir I.; and Scherbinin, Eduard V., 4,185,159, Cl. 13-29.000.

Levine, Melvin. Piston crankshaft connecting rod. 4,184,384, Cl. 74-579.00E.

Levinson, Lionel M., to General Electric Company. High breakdown voltage varistor. 4,184,984, Cl. 252-518.000.

Lewis, Donald J.: *See—*
Corey, Kenneth J., 4,184,517, Cl. 138-147.000.

Lexique Limited: *See—*
Whitmarsh, Denis H., 4,184,693, Cl. 280-11.280.

Leybold-Heraeus GmbH: *See—*
Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Stephan, Herbert; and Stark, Friedrich, 4,184,448, Cl. 118-729.000.

LGZ Landis & Gyr Zug AG: *See—*
Greenaway, David L., 4,184,700, Cl. 283-6.000.

Lidenmeier, Heinz: *See—*
Meinke, Hans H.; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lidenmeier, Heinz, 4,184,492, Cl. 128-303.140.

Lieb, Donald F.: *See—*
Solomon, Frank; Lieb, Donald F.; and LaBarre, Ronald L., 4,185,142, Cl. 429-49.000.

Liebal, Eberhard, to Messrs. J. Walter Co. Maschinen GmbH. Mounting plate for a compression mould part. 4,184,865, Cl. 65-319.000.

Liebert, Karl-Heinz, to Zahnradfabrik Friedrichshafen AG. Hydrostatic two-circuit steering arrangement. 4,184,332, Cl. 60-386.000.

Lifshutz, Norman, to Woodstream Corporation. Padded jaw animal trap. 4,184,282, Cl. 43-90.000.

Liggett Group Inc.: *See—*
Hall, Floyd V., 4,184,412, Cl. 93-1.00C.

Lin, Shao-Chi; and Wright, Steve A., to Xonics, Inc. Closed cycle gas handling system. 4,185,194, Cl. 250-315.100.

Lin, Stephen V., to Westvaco Corporation. Process for reduction of lignin color. 4,184,845, Cl. 8-34.000.

Linde Aktiengesellschaft: *See—*
Abels, Theodor; Honecker, Guenther; and Goetz, Bernhard, 4,184,561, Cl. 180-155.000.

Linden, Clemens: *See—*
Handrick, Kurt; Kolling, Georg; Linden, Clemens; and Droll, Gunter, Jr., 4,185,023, Cl. 260-369.000.
Handrick, Kurt; Kolling, Georg; and Linden, Clemens, 4,185,024, Cl. 260-369.000.

Lindermann, Herbert, to Fried. Kruff Gesellschaft mit beschrankter Haftung. Cooling chamber closure member. 4,184,535, Cl. 164-442.000.

Lindmayer, Joseph; and Wrigley, Charles Y., to Solarex Corporation. Integrated photovoltaic generator. 4,184,894, Cl. 136-89.0MS.

Lindsey, William C., to International Shoe Machine Corporation. Method of stretching an upper about the vamp of a last. 4,184,219, Cl. 12-145.000.

Lintelmann, Willy; and Frey, Peter J., to HF Systems, Incorporated. Obscuration type smoke detector. 4,185,278, Cl. 340-630.000.

Lion Fat & Oil Co., Ltd.: *See—*
Yamamoto, Kazuo; Sekiguchi, Shizuo; and Miyawaki, Yozo, 4,185,034, Cl. 260-513.00R.

Lishka, Marie A.: *See—*
Putz, Patricia J.; Lishka, Marie A.; and Latos, Edwin J., 4,184,983, Cl. 252-466.0PT.

List, Hans: *See—*
Freyn, Fritz, 4,184,468, Cl. 123-182.000.
Kirchweger, Karl; Thien, Gerhard; and Fachbach, Heinz, 4,184,471, Cl. 123-198.00E.

Little, Carl H., to Weber-Knapp Company. Hood latch. 4,184,705, Cl. 292-247.000.

Litton Systems, Inc.: *See—*
Morgan, Thomas J.; Marfatia, Anil; and Kullman, William G., 4,184,945, Cl. 219-10.55D.

Liu, Charles C.: *See—*
Hubing, James H.; and Liu, Charles C., 4,185,287, Cl. 343-761.000.

Lockwood Graders (UK) Limited: *See—*
Cowlin, Robert M.; Long, Peter G.; Sapsed, Leslie F.; and Steward, John F., 4,184,598, Cl. 209-705.000.

Loechelt, Cecil P.: *See—*
Hornbaker, Edwin D.; Nugent, Adam, Jr.; and Loechelt, Cecil P., 4,184,924, Cl. 202-175.000.

Loetterle, Marvin F.: *See—*
Rossiter, Paul H.; and Loetterle, Marvin F., 4,185,057, Cl. 264-40.100.

Loevenich, Norbert. Apparatus for discharging drilling debris, drilling dust and the like, more particularly during the drilling operation in the case of hand drilling machine. 4,184,226, Cl. 15-415.00R.

Loffland Brothers Company: *See—*
Burns, Kenneth L.; Smith, Raymond E.; and Doughdrill, Don J., 4,184,838, Cl. 431-202.000.

Logan, Ted J., to Procter & Gamble Company, The. Hydrolysis of methyl esters. 4,185,027, Cl. 260-415.000.

Loge, Hans; and Lohn, Gerd, to Kaltenbach & Voigt GmbH & Co. Miniature motor having an internal coolant line. 4,184,256, Cl. 433-82.000.

Lohaus, Gerhard: *See—*
Dittmar, Walter; Futterer, Eberhard; and Lohaus, Gerhard, 4,185,106, Cl. 424-263.000.

Lohn, Gerd: *See—*
Loge, Hans; and Lohn, Gerd, 4,184,256, Cl. 433-82.000.

London, Harold: *See*—
Corby, Karl W.; Ogden, William H., III; and London, Harold, 4,184,281, Cl. 43-57.000.
Long, Harry F.: *See*—
Burkey, David J.; Clark, Lawrence; George, Jay R.; and Long, Harry F., 4,184,940, Cl. 204-281.000.
Long, Peter G.: *See*—
Cowlin, Robert M.; Long, Peter G.; Sapsed, Leslie F.; and Steward, John F., 4,184,598, Cl. 209-705.000.
L'Oreal: *See*—
Grollier, Jean F.; and Fourcadier, Chantal, 4,184,844, Cl. 8-10.200.
Lorenz, Peter R. Mounting for centrifuge filling device. 4,184,524, Cl. 141-392.000.
Lortz, Allan R.: *See*—
Anthony, James R.; and Lortz, Allan R., 4,184,234, Cl. 24-196.000.
Los Angeles Scientific Instrument Co., Inc.: *See*—
Buerner, Wolfgang P., 4,184,261, Cl. 33-18.00R.
Lott, Dan R.: *See*—
United States of America, National Aeronautics and Space Administration; Dillard, Paul A.; Fritz, Walter M.; and Lott, Dan R., 4,184,903, Cl. 156-104.000.
Louderback, Lauren G., to Clear Pine Mouldings, Inc. Lumber treating mechanism. 4,184,449, Cl. 118-63.000.
Lovell, Walter: *See*—
Grise, Frederick G. J.; and Lovell, Walter, 4,184,422, Cl. 99-485.000.
Lowe, Henry E., Jr. Integral page and tab. 4,184,699, Cl. 281-41.000.
Luke, Douglas V.: *See*—
Baker, Peter D.; and Luke, Douglas V., 4,184,743, Cl. 350-96.230.
Lundberg, Robert D.: *See*—
Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, 4,184,988, Cl. 260-23.50A.
Lutz, John T., Jr.: *See*—
Singh, Udai P.; and Lutz, John T., Jr., 4,184,993, Cl. 260-31.20R.
Luzzatto, Ettore, to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa s.p.a. Process for high speed production of pre-oriented yarns. 4,185,062, Cl. 264-176.00F.
LVK Associates, Inc.: *See*—
Katz, Hugh S.; and Garrett, Anthony N., 4,184,724, Cl. 312-209.000.
Lynch, Brian; and Wright, James G., Jr., to Western Electric Company, Incorporated. Methods of simultaneously covering each of a plurality of elongated materials with uniformly weighted pulp insulation. 4,184,913, Cl. 162-106.000.
Lyon, Edwin. Survival belt. 4,184,617, Cl. 224-151.000.
M&T Chemicals Inc.: *See*—
Bradley, Edward T., 4,184,881, Cl. 106-20.000.
MacAdams, John L.; Wu, William C. L.; and Joyner, Richard S., to Chemplex Company. Method of rotationally molding plastic articles. 4,185,067, Cl. 264-310.000.
Machurat, Jean; and Vrisakis, Georges, to Rhone-Poulenc Industries. Process for preparing plastic compositions containing a silicate dispersed therein. 4,185,001, Cl. 260-42.370.
MacInnis, Martin B.: *See*—
Quatrini, L. Rita; and MacInnis, Martin B., 4,185,078, Cl. 423-49.000.
Maddocks, Frank E., III: *See*—
Wagner, George R., 4,185,192, Cl. 250-221.000.
Maeda, Hiroaki, to Aisin Seiki Kabushiki Kaisha. Output split-type mechanical and hydraulic transmission. 4,184,385, Cl. 74-687.000.
Maeder, Arthur: *See*—
Nachbur, Hermann; and Maeder, Arthur, 4,185,037, Cl. 260-583.00E.
MaGill, Perry W., to Ampco Foods Inc. Flattenable top for gable top containers. 4,184,624, Cl. 229-17.00G.
Magill, Robert J.; and Field, Sydney J., to Actionair Equipment Limited. Smoke and fire shield damper. 4,184,288, Cl. 49-7.000.
Magnetic Peripherals Inc.: *See*—
Green, Paul N.; and Duff, James A., 4,185,313, Cl. 360-133.000.
Maier, Erwin, to Wilhelm Maier & Sohne. Blind stitch sewing machine. 4,184,442, Cl. 112-178.000.
Majmudar, Suresh: *See*—
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, 4,185,025, Cl. 260-406.000.
Makarov, Felix K.: *See*—
Pevzner, Lev V.; Ustkachkintsev, Alexandr N.; Yakobson, Boris V.; Timofeev, Andrei V.; Furman, Anna A.; Vaskanov, Sergei E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M., 4,184,972, Cl. 252-62.540.
Maki, Minoru: *See*—
Sakai, Takao; Maki, Minoru; and Tamura, Hisashi, 4,184,796, Cl. 409-12.000.
Maklad, Mokhtar S., to International Telephone and Telegraph Corporation. Method of fabricating an elliptical core single mode fiber. 4,184,859, Cl. 65-2.000.
Makowski, Henry S.; Lundberg, Robert D.; and Bock, Jan, to Exxon Research & Engineering Co. Process for the sulfonation of an elastomeric polymer. 4,184,988, Cl. 260-23.50A.
Mallek, Heinz; and Jablonski, Werner, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Furnace for waste material. 4,184,437, Cl. 110-251.000.
Maltby, Robert C.: *See*—
Maltby, Thomas F.; Maltby, Robert C.; and Wakefield, Alan W., 4,184,555, Cl. 177-208.000.
Maltby, Thomas F.; Maltby, Robert C.; and Wakefield, Alan W. Weighing apparatus. 4,184,555, Cl. 177-208.000.
Manchak, Frank, Jr. Apparatus for treating sumps. 4,184,958, Cl. 210-170.000.
Mandrin, Charles, to Sulzer Brothers Limited. Plant and process for recovering waste heat. 4,184,325, Cl. 60-39.18R.
Manguson, Harold A.: *See*—
Thomas, Timothy J.; and Manguson, Harold A., 4,184,376, Cl. 73-709.000.
Mann, Douglas D.: *See*—
Carnes, Allen R.; and Mann, Douglas D., 4,185,093, Cl. 424-153.000.
Mannesmann Aktiengesellschaft: *See*—
Landgraf, Helmut; and Lange, Klaus, 4,184,839, Cl. 432-124.000.
Manning, Andrew J.: *See*—
Woerner, Douglas C.; and Manning, Andrew J., 4,185,133, Cl. 427-209.000.
Manning, William P., to Combustion Engineering, Inc. Combustion control system. 4,184,837, Cl. 431-90.000.
Marfatia, Anil: *See*—
Morgan, Thomas J.; Marfatia, Anil; and Kullman, William G., 4,184,945, Cl. 219-10.55D.
Margetts, Hugh G., to Girling Limited. Control valve assemblies for hydraulic braking systems. 4,184,717, Cl. 303-52.000.
Maritec Corporation: *See*—
Baker, Kenneth R.; and DeVault, Robert T., 4,184,566, Cl. 181-261.000.
Marjollet, Jacques; and Marsault, Jean-Jacques, to Stein Industrie S.A. Axially bolted flange joint. 4,184,785, Cl. 403-337.000.
Mark, Victor; and Wilson, Phillip S., to General Electric Company. Plasticized polycarbonate composition employing solid ketones. 4,184,994, Cl. 260-32.80R.
Marmo, Anthony R., to Westinghouse Electric Corp. Sludge recovery apparatus. 4,184,959, Cl. 210-179.000.
Marosy, Andre. Coupling. 4,184,232, Cl. 24-201.00A.
Marquette Metal Products Company: *See*—
Anderson, J. Edward C., 4,184,552, Cl. 173-93.500.
Marsault, Jean-Jacques: *See*—
Marjollet, Jacques; and Marsault, Jean-Jacques, 4,184,785, Cl. 403-337.000.
Marsh, David R.; and Stark, Leonard E., to Standard Oil Company (Indiana). Apparatus for iso- or terephthalic acid production in and recovery from benzoic acid-water solvent system. 4,185,073, Cl. 422-111.000.
Marshall John W.: *See*—
Woodward, Donald R.; and Marshall John W., 4,184,630, Cl. 235-302.400.
Marten, Wolfgang: *See*—
Esser, Gustav; and Marten, Wolfgang, 4,184,691, Cl. 279-5.000.
Martin, Julian R.: *See*—
Baker, Max N.; and Martin, Julian R., 4,184,305, Cl. 53-50.000.
Martin, Lee E.: *See*—
Tataria, Harshad; Schneider, Alan A.; Travers, William A., Jr.; and Martin, Lee E., 4,184,937, Cl. 204-195.00R.
Marton, Miksa. Vacuum hand sanding device. 4,184,291, Cl. 51-170.00R.
Martz, Lyle F.: *See*—
Kiscaden, Roy W.; Martz, Lyle F.; and Uram, Robert, 4,184,324, Cl. 60-39.18B.
Marvel, John R.: *See*—
Rovee, David T.; Marvel, John R.; and Mezick, James A., 4,185,100, Cl. 424-240.000.
Masco Corporation: *See*—
Rubin, Sol R.; and Gates, Raymond D., 4,184,703, Cl. 285-49.000.
Massachusetts General Hospital, The: *See*—
Young, David M., 4,185,095, Cl. 424-177.000.
Masson, Pierre L.: *See*—
Cambiaso, Cesar L.; de Steenwinkel, Floris; Leek, Adrian E.; and Masson, Pierre L., 4,184,849, Cl. 23-230.00B.
Masson Scott Thrissell Engineering Ltd.: *See*—
Wood, David, 4,184,392, Cl. 83-88.000.
Masters, Darrell J.: *See*—
Burgess, David E.; and Masters, Darrell J., 4,184,755, Cl. 353-45.000.
Masutani, Kouzi: *See*—
Kiritani, Masaaki; Kanai, Mitsugu; Harada, Denzaburo; Nishida, Chikashi; Asanuma, Yoshiyuki; Ikeda, Kenji; and Masutani, Kouzi, 4,184,387, Cl. 74-720.500.
Masuzawa, Sigeaki: *See*—
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,185,169, Cl. 179-1.0SM.
Maternaghan, Trevor J., to Ciba-Geigy AG. Process for the manufacture of photographic silver halide emulsions containing silver halide crystals of the twinned type. 4,184,877, Cl. 430-567.000.
Maternaghan, Trevor J., to Ciba-Geigy Aktiengesellschaft. Process for the manufacture of photographic silver halide emulsions containing silver halide crystals of the twinned type. 4,184,878, Cl. 430-567.000.
Mathis, Ronald D., to Phillips Petroleum Company. Multi-component stabilizing system for pigmented polyolefins. 4,185,004, Cl. 260-45.8NT.
Matrix Science Corporation: *See*—
Mattingly, William R., Jr., 4,184,245, Cl. 29-629.000.
Matsui, Takayasu; and Temino, Satoshi, to Nissan Motor Company, Limited. Vehicle body construction with unsightly part concealing cover. 4,184,713, Cl. 296-137.00R.

Matsumoto, Kazuaki: *See*—
Ouchi, Chiaki; Okita, Tomoyoshi; and Matsumoto, Kazuaki, 4,184,898, Cl. 148-12.00F.

Matsumoto, Setsuo, to Singer Company, The. Device for selecting laminate cam for sewing machines. 4,184,440, Cl. 112-158.00A.

Matsumoto, Toru: *See*—
Kuge, Tsukasa; Matsumoto, Toru; Watanabe, Tsuyoshi; and Tamura, Yasuyuki, 4,185,129, Cl. 430-120.000.

Matsuo, Toshitaka, to Alps Electric Co., Ltd. Change-over switch for use in high-frequency electric circuits. 4,185,176, Cl. 200-16.00D.

Matsushima, Kikuo: *See*—
Sakakibara, Sakuichi; Sugisawa, Ko; Kimura, Takashi; Yasukawa, Teruo; and Matsushima, Kikuo, 4,185,125, Cl. 426-439.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Hirao, Takashi; Takayanagi, Shigetoshi; Onuma, Takeshi; Sugawa, Toshio; and Inoue, Kaoru, 4,185,291, Cl. 357-22.000.
Mitsuda, Katsumi; Yamamoto, Katsuhiko; Adachi, Katsumi; Tsujihara, Susumu; Saeki, Taiichi; and Takeda, Minoru, 4,185,301, Cl. 358-242.000.
Nishikawa, Shoji; and Nakabe, Ryuhei, 4,185,296, Cl. 358-45.000.
Watanabe, Sadao; Itoh, Mitsuru; Sakairi, Tadashi; Funakoshi, Yasutomo; and Hiya, Kohji, 4,185,262, Cl. 335-302.000.

Mattingly, William R., Jr., to Matrix Science Corporation. Removal tool and method of using. 4,184,245, Cl. 29-629.000.

Maurer, Francis J.: *See*—
Benkowski, William J.; Fishel, Richard L.; and Maurer, Francis J., 4,184,829, Cl. 425-202.000.

Max Datwyler & Co.: *See*—
Widmer, Max, 4,184,429, Cl. 101-169.000.

Maydan, Dan: *See*—
Dean, Robert E.; Maydan, Dan; Moran, Joseph M.; and Taylor, Gary N., 4,185,202, Cl. 250-492.00A.

Mayer, Thomas E.; McCarthy, Richard A.; and Yokota, George, to Worthington Compressors, Inc. Plate valve. 4,184,508, Cl. 137-512.100.

Maytag Company, The: *See*—
Ross, Frank E., 4,184,704, Cl. 292-201.000.

Mazzorana, Alfred B., to Societe de Paris et du Rhone. Starter motor for an internal combustion engine. 4,184,378, Cl. 74-7.00A.

McArthur, William H. Solar energy collecting apparatus. 4,184,476, Cl. 126-429.000.

McCarthy, Richard A.: *See*—
Mayer, Thomas E.; McCarthy, Richard A.; and Yokota, George, 4,184,508, Cl. 137-512.100.

McConachy, Harry R. Fishing reel assembly. 4,184,651, Cl. 242-84.20B.

McCort, Ralph E., to Owens-Corning Fiberglas Corporation. Apparatus for producing blowing wool insulation from glass wool mat. 4,184,643, Cl. 241-87.000.

McCoy, Rawley: *See*—
Dosch, Thomas J.; McCoy, Rawley; and Steele, Theodore W., 4,185,288, Cl. 343-765.000.

McDonald, Robert L.; and Biasone, Frank, to Wisconsin Wires, Inc. Fabrics for papermaking machines. 4,184,519, Cl. 139-425.00A.

McDonnell Douglas Corporation: *See*—
Grossman, Jack J., 4,184,749, Cl. 350-195.000.
Waters, E. Dale, 4,184,862, Cl. 165-76.000.

McGann, Rodney: *See*—
Paull, Peter L.; and McGann, Rodney, 4,184,322, Cl. 60-39.020.

McGannon, William J., to United States of America, National Aeronautics and Space Administration. Intra-ocular pressure normalization technique and equipment. 4,184,491, Cl. 128-276.000.

McGill, Kenneth H.: *See*—
Parker, Curtis J.; and McGill, Kenneth H., 4,184,814, Cl. 417-454.000.

McGraw-Edison Company: *See*—
Gilker, Clyde; and Lamke, Arland D., 4,185,177, Cl. 200-17.00R.

McIntire, Floyd C., to Abbott Laboratories. Chemically modified endotoxin immunizing agent. 4,185,090, Cl. 424-92.000.

McIntire, John E.: *See*—
McIntire, Kendrick H.; and McIntire, John E., 4,184,473, Cl. 126-77.000.

McIntire, Kendrick H.; and McIntire, John E. Improved mobile home heater. 4,184,473, Cl. 126-77.000.

McKay, George A.: *See*—
Ewanus, Walter; and McKay, George A., 4,185,241, Cl. 325-47.000.

McKenna, Lawrence W., Jr.; Finkelstein, Ronald S.; and Haynes, John K., Jr., to Monsanto Company. Pressure sensitive adhesive compositions containing a polymetaloxane. 4,185,051, Cl. 525-370.000.

McKim, James B., Jr.; and Rehse, Denis, to Hewlett-Packard Company. Bipolar signal to current converter. 4,185,249, Cl. 330-85.000.

McMillen, James W., Jr.; and Finley, James D., to Westinghouse Electric Corp. Anti-pump circuit breaker. 4,185,208, Cl. 307-140.000.

Mead Corporation, The: *See*—
Kenworthy, E. J. Doyle, 4,184,925, Cl. 204-11.000.

Mearig, Stephen G., to Armstrong Cork Company. Surface-texture filmwork generation. 4,184,910, Cl. 430-323.000.

Medicor Muvek: *See*—
Agoston, Mihaly, 4,184,485, Cl. 128-670.000.

Medlin, Glenn D. Boring tool. 4,184,795, Cl. 408-127.000.

Megatech Corporation: *See*—
Haldeman, Charles W.; and Basmajian, Vahan V., 4,184,469, Cl. 123-193.0CP.

Megna, Salvatori G.; and Pracht, Gunther, to "Jaguar" Stahlwaren Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft. Scissors-like tool. 4,184,249, Cl. 30-341.000.

Meijer, Albert J., to U.S. Philips Corporation. Cutter foil for dry shaving apparatus. 4,184,250, Cl. 30-346.510.

Meininger, Fritz; and Springer, Hartmut, to Hoechst Aktiengesellschaft. Water-soluble, fibre-reactive copper complex disazo dyestuffs. 4,185,012, Cl. 260-148.000.

Meinke, Hans H.; Flachenecker, Gerhard; Fastenmeier, Karl; Landstorfer, Friedrich; and Lidenmeier, Heinz, to Karl Storz Endoscopy-America, Inc. Safety circuitry for high frequency cutting and coagulating devices. 4,184,492, Cl. 128-303.140.

Meli, Alberto; Bianchini, Claudio; del Soldato, Piero; Ghelardoni, Mario; Pestellini, Vittorio; and Volterra, Giovanna, to A. Menarini S.A.S. 2-(4-Biphenylyl)-N-(2-diethylamino alkyl)propionamide and salts thereof used as spasmolytic agents. 4,185,124, Cl. 424-324.000.

Melindo, Flavio; and Rocci, Renato, to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and means for detecting digitized multi frequency-coded signals. 4,185,172, Cl. 179-15.0BY.

Melkonian, Diran: *See*—
Gold-Aubert, Philippe; and Melkonian, Diran, 4,185,104, Cl. 424-254.000.

Melocik, Grant C.: *See*—
Blaha, James G.; Melocik, Grant C.; and Wible, John E., 4,184,333, Cl. 60-420.000.

Menard, Joel: *See*—
Castro, Bertrand; Menard, Joel; Evin, Genevieve; and Corvol, Pierre, 4,185,096, Cl. 424-177.000.

Merchant, Hamir D., to Bigelow-Sanford, Inc. Method for installing a floor covering over metal ducts or plates. 4,184,304, Cl. 52-746.000.

Merck & Co., Inc.: *See*—
Wagner, Arthur F., 4,185,088, Cl. 424-78.000.

Mergell Kommanditgesellschaft: *See*—
Mergell, Wolfgang, 4,184,648, Cl. 242-56.00R.

Mergell, Wolfgang, to Mergell Kommanditgesellschaft. Method and device for continuously producing rolls of web material. 4,184,648, Cl. 242-56.00R.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Betzmeir, Helmut, 4,184,731, Cl. 339-45.00M.

Messrs. J. Walter Co. Maschinen GmbH: *See*—
Liebal, Eberhard, 4,184,865, Cl. 65-319.000.

Metcalf, Robert L., to Wilbanks International, Inc. Drainage foil apparatus with individually replaceable ceramic segments. 4,184,915, Cl. 162-352.000.

Mettler Instrumente AG: *See*—
Kunz, Peter, 4,184,556, Cl. 177-210.0EM.
Kunz, Peter, 4,184,557, Cl. 177-229.000.

Metzger, Julio, to E. R. Squibb & Sons, Inc. Purification of nystatin in an aqueous system. 4,185,092, Cl. 424-123.000.

Meusel, Jurgen: *See*—
Huber, Peter; and Meusel, Jurgen, 4,184,880, Cl. 106-15.050.

Mevel, Emile: *See*—
Azam, Guy; Bensussan, Andre; Levaillant, Claude; Huber, Harry; Mevel, Emile; and Tronc, Dominique, 4,184,956, Cl. 210-103.000.

Meyer, Paul, to Frenkel C-D Aktiengesellschaft. Mixing apparatus. 4,184,772, Cl. 366-77.000.

Mezick, James A.: *See*—
Rovee, David T.; Marvel, John R.; and Mezick, James A., 4,185,100, Cl. 424-240.000.

Michael, Dietrich: *See*—
Tacke, Peter; Neuray, Dieter; and Michael, Dietrich, 4,185,044, Cl. 525-1.000.

Micro-Mega S.A.: *See*—
Leonard, Henri, 4,184,257, Cl. 433-82.000.

Mid-Continent Aircraft Corporation: *See*—
Cook, Richard J.; and Reade, Richard, 4,184,802, Cl. 414-680.000.

Middlebrook, Paul J., to Monomech Developments Limited. Apparatus for and a method of applying layers of friable material. 4,184,521, Cl. 141-1.000.

Middleton, Verne L.: *See*—
Kleine, Charles A.; and Middleton, Verne L., 4,184,543, Cl. 165-170.000.

Mietens, Gerhard: *See*—
Ahlgrim, Michael; Mietens, Gerhard; and Zygmann, Helga, 4,184,932, Cl. 204-129.430.

Mikron Haesler S.A.: *See*—
Nutt, Helmut, 4,184,236, Cl. 29-38.00R.

Miles, Ronald T.: *See*—
United States of America, National Aeronautics and Space Administration; Holmes, John F.; and Miles, Ronald T., 4,184,368, Cl. 73-170.00A.

Millea, Michael F., to United States of America, Air Force. Surface barrier tailoring of semiconductor devices utilizing scanning electron microscope produced ionizing radiation. 4,184,896, Cl. 148-1.500.

Miller Brothers Farms, Inc.: *See*—
Miller, Charles S., 4,184,639, Cl. 239-177.000.

Miller, Charles S., to Miller Brothers Farms, Inc. Side walking irrigation system. 4,184,639, Cl. 239-177.000.

Miller, Donald L., to Facet Enterprises, Inc. Electromagnetic clutch with two stage torque buildup. 4,184,577, Cl. 192-84.00C.

Miller, James A.: *See*—
Perret, Ludwig A.; and Miller, James A., 4,185,305, Cl. 360-33.000.

Miller, Larry D.: *See*—
Griffin, Noel J.; Miller, Larry D.; Squire, Gerald K.; and Knochelmann, Carl E., Jr., 4,185,265, Cl. 340-32.000.

Miller, Robert L., to Honeywell Inc. Apparatus with a single input connectable to electrical energizing sources of different character. 4,185,315, Cl. 361-205.000.

Miller, Thomas R.: *See*—
Jones, Emrys H., Jr.; and Miller, Thomas R., 4,184,553, Cl. 175-61.000.
Millipore Corporation: *See*—
Sternberg, Shmuel, 4,184,963, Cl. 210-321.00R.
Milner, Brian R.: *See*—
Huang, Kwang T.; and Milner, Brian R., 4,185,161, Cl. 174-11.00R.
Minematsu, Kiyoshi: *See*—
Namura, Hisaki; Ohta, Koichi; Takeda, Masao; and Minematsu, Kiyoshi, 4,185,248, Cl. 330-2.000.
Miner, Thomas G.: *See*—
Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., 4,185,115, Cl. 424-310.000.
Minnesota Mining and Manufacturing Company: *See*—
Giulie, Joe D., 4,184,782, Cl. 402-15.000.
Nelson, Norman E.; and Cheasick, Robert C., 4,184,650, Cl. 242-71.800.
Minolta Camera Kabushiki Kaisha: *See*—
Hashimoto, Nobuo; and Hirata, Hiroshi, 4,184,753, Cl. 352-140.000.
Kondo, Takashi, 4,184,757, Cl. 354-43.000.
Mintz, Charlotte: *See*—
Gaffney, William, 4,184,904, Cl. 156-145.000.
Mirowski, Mieczyslaw: *See*—
Langer, Alois A.; Heilman, Marlin S.; Mower, Morton M.; and Mirowski, Mieczyslaw, 4,184,493, Cl. 128-419.00D.
Mirtain, Henri J., to Uniroyal, S.A. Tire and reinforcing belt therefor. 4,184,530, Cl. 152-361.0FP.
Mirviss, Stanley B.; and Von Lehman, Thomas M., to Stauffer Chemical Company. Process for manufacturing substantially pure dialkyl phosphorochloridothionate. 4,185,053, Cl. 260-986.000.
Mishel, Madeline H. Game racket and method of making same. 4,184,679, Cl. 273-73.00D.
Misumi, Toshimi: *See*—
Nakamura, Norihiko; Itoh, Takaaki; and Misumi, Toshimi, 4,185,054, Cl. 261-44.00C.
Mitchell, Robert W.: *See*—
Allinson, David J. S.; and Mitchell, Robert W., 4,184,953, Cl. 210-82.000.
Mitrushev, Marin D.: *See*—
Stoev, Stoycho M.; Mitrushev, Marin D.; Boshilov, Grozdan T.; and Radeva, Maria G., 4,184,965, Cl. 210-388.000.
Mitsubishi Chemical Industries Ltd.: *See*—
Oba, Hiroshi; Murayama, Tetsuo; and Otsuka, Shigenori, 4,184,871, Cl. 430-90.000.
Mitsubishi Gas Chemical Company: *See*—
Koda, Hiroyuki; Hamaya, Kunio; Yoshizaki, Hiroyuki; Kojima, Yutaka; Tsuchiya, Shiro; Fukuda, Shinichi; and Ikeno, Takashi, 4,184,911, Cl. 159-47.00R.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Nomura, Jiro; Nakatomi, Hiroshi; and Yuasa, Yoshikatsu, 4,184,812, Cl. 417-407.000.
Mitsubishi Rayon Company Limited: *See*—
Sato, Hiroshi; Nakatani, Munetsugu; and Sugimori, Shuichi, 4,185,148, Cl. 526-348.100.
Mitsuda, Katsumi; Yamamoto, Katsuhiko; Adachi, Katsumi; Tsujihara, Susumu; Saeki, Taiichi; and Takeda, Minoru, to Matsushita Electric Industrial Co., Ltd. Scanning velocity modulation system. 4,185,301, Cl. 358-242.000.
Mitsugi, Koji: *See*—
Nakamori, Shigeru; Yokozeki, Kenzo; and Mitsugi, Koji, 4,184,918, Cl. 435-106.000.
Mitsui Engineering & Shipbuilding Co., Ltd.: *See*—
Abe, Setsuo; Asakura, Tomomi; Shirato, Takeshi; and Miyake, Motomasa, 4,184,323, Cl. 60-39.030.
Mitsui, Shigeo: *See*—
Uchida, Tsutomu; Ono, Zenichi; Nagashima, Makoto; Tasaka, Eiji; Mitsui, Shigeo; and Nomura, Keiichi, 4,184,800, Cl. 414-56.000.
Miyake, Kazuhiko; and Yamada, Bunkichi, to Tokyo Shibaura Electric Co., Ltd. Phase control of parabolic wave in special effects system. 4,185,300, Cl. 358-183.000.
Miyake, Motomasa: *See*—
Abe, Setsuo; Asakura, Tomomi; Shirato, Takeshi; and Miyake, Motomasa, 4,184,323, Cl. 60-39.030.
Miyamae, Yasuo: *See*—
Suzuki, Takao; and Miyamae, Yasuo, 4,185,179, Cl. 200-44.000.
Miyawaki, Yozo: *See*—
Yamamoto, Kazuo; Sekiguchi, Shizuo; and Miyawaki, Yozo, 4,185,034, Cl. 260-513.00R.
Mizutani, Nagao: *See*—
Kurihara, Toshio; Mizutani, Nagao; and Ohkawara, Yasuo, 4,184,780, Cl. 400-56.000.
Mlay, John, Jr.: *See*—
Jenney, Hilas L.; and Mlay, John, Jr., 4,184,367, Cl. 73-37.000.
Mobil Oil Corporation: *See*—
Caldwell, Richard L., 4,185,193, Cl. 250-269.000.
Mobil Tyco Solar Energy Corporation: *See*—
Hatch, Arthur E.; and Yates, Douglas A., 4,185,076, Cl. 422-246.000.
Yates, Douglas A., 4,184,907, Cl. 156-601.000.
Mochida, Ei; Ogawa, Nobuhisa; Shinkai, Hiroyuki; and Hashimoto, Masakatsu, to Mochida Seiyaku Kabushiki Kaisha. Immunochemical measuring method using second antigenic substance. 4,185,084, Cl. 424-1.000.
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Mochida, Ei; Ogawa, Nobuhisa; Shinkai, Hiroyuki; and Hashimoto, Masakatsu, 4,185,084, Cl. 424-1.000.
Mock, Wayne E., to Jet Research Center, Inc. Method and apparatus for severing tubing. 4,184,430, Cl. 102-24.00R.
Modular Distribution Systems Limited: *See*—
Allen, David; and Rowley, Robert J., 4,184,708, Cl. 294-67.00R.
Mohrke, Helmut: *See*—
Gebauer, Peter; Kaufer, Wilhelm; and Mohrke, Helmut, 4,185,000, Cl. 260-42.270.
Mole, Cecil J.; Haller, Henry E., III; and Wedman, Leonard N., to Westinghouse Electric Corp. Circumferentially-segmented magnet homopolar dynamoelectric machine. 4,185,216, Cl. 310-178.000.
Moliard, Henry. Collapsible expansible container. 4,184,602, Cl. 220-4.00C.
Monarch Marking Systems, Inc.: *See*—
Franklin, Priscilla S.; and Jones, Frederick L., 4,184,701, Cl. 283-9.00R.
Monomech Developments Limited: *See*—
Middlebrook, Paul J., 4,184,521, Cl. 141-1.000.
Monsanto Company: *See*—
Kruse, Robert L.; and Peng, Fred M., 4,185,049, Cl. 525-84.000.
McKenna, Lawrence W., Jr.; Finkelstein, Ronald S.; and Haynes, John K., Jr., 4,185,051, Cl. 525-370.000.
Tolbert, William R.; Feder, Joseph; and Kimes, Richard C., 4,184,916, Cl. 435-241.000.
Montagu, Jean I., to General Scanning, Inc. Permanent magnet synchronous motor. 4,185,215, Cl. 310-83.000.
Mooney, Robert: *See*—
Cutler, Jerome J., 4,184,345, Cl. 64-28.00R.
Moore, Albert E.: *See*—
Casson, M. E.; Moore, Albert E.; and Berry, George J., Sr., 4,184,815, Cl. 417-477.000.
Oscarsson, Rolf A.; and Moore, Albert E., 4,184,962, Cl. 210-232.000.
Moore, John B.; and Nix, Richard A., to Automotive Products Limited. Diaphragm spring clutches. 4,184,578, Cl. 192-89.00B.
Moore, John F., to EMI Limited. Construction of collimators and/or detectors for penetrating radiation. 4,185,195, Cl. 250-361.00R.
Moran, Joseph M.: *See*—
Dean, Robert E.; Maydan, Dan; Moran, Joseph M.; and Taylor, Gary N., 4,185,202, Cl. 250-492.00A.
Morcom, William R.; and Berry, Kenneth A., to Harris Corporation. Method of fabricating two level interconnects and fuse on an IC. 4,184,933, Cl. 204-192.0EC.
Morena, Robert: *See*—
Hughes, Ronald H.; and Morena, Robert, 4,184,883, Cl. 106-56.000.
Morgan, Barrie O.: *See*—
Kinch, Frederick A., Jr.; and Morgan, Barrie O., 4,185,166, Cl. 178-22.000.
Morgan, Clyde R.: *See*—
Boyer, Scott M.; Dawson, Chris R.; French, Charles S.; Morgan, Clyde R.; and Grabos, Fred F., Jr., 4,184,273, Cl. 36-131.000.
Morgan, Thomas J.; Marfatia, Anil; and Kullman, William G., to Litton Systems, Inc. Microwave wall oven air flow system. 4,184,945, Cl. 219-10.55D.
Morgardshammar Aktiebolag: *See*—
Danielsson, Kurt L., 4,184,723, Cl. 308-190.000.
Mori, Keizi, to Aisin Seiki Kabushiki Kaisha. Carrier shoe for a vehicle's slidable roof. 4,184,710, Cl. 296-137.00E.
Mori, Toshio: *See*—
Tobita, Hideyuki; and Mori, Toshio, 4,184,347, Cl. 68-12.00R.
Morii, Seiji: *See*—
Nakazeki, Tugito; Kimata, Kei; Fukunaga, Syoichi; Kuroiwa, Takashi; and Morii, Seiji, 4,184,465, Cl. 123-139.0AW.
Morino, Masuaki; and Hashimoto, Shintaro, to Sharp Kabushiki Kaisha. Programmable synthetic-speech calculators or micro computers. 4,185,170, Cl. 179-1.0SM.
Morlino, Robert J., to Union Carbide Corporation. Hair conditioning compositions containing dialkylamino hydroxy organosilicon compounds and their derivatives. 4,185,087, Cl. 424-70.000.
Morris, Dow V.; and Glahn, Robert J., to Wheatley Company. Seal ring for cylinder head of piston pumps. 4,184,411, Cl. 92-171.000.
Morris, Earl L., to Acorn Engineering Co. Waste drain coupling for plumbing fixtures. 4,184,702, Cl. 285-39.000.
Morris, George C.: *See*—
Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., 4,185,075, Cl. 422-191.000.
Morris, Robert W., to Tektronix, Inc. Cathode ray tube with dual collector layer storage target. 4,185,227, Cl. 315-13.0ST.
Morrow, William D.: *See*—
Goss, John B.; and Morrow, William D., 4,184,600, Cl. 212-70.000.
Morton-Norwich Products, Inc.: *See*—
White, Ralph L., Jr.; and Yu, Chia-Nien, 4,185,020, Cl. 260-347.300.
Yu, Chia-Nien, 4,185,021, Cl. 260-347.700.
Morville, Malcolm: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,185,116, Cl. 424-319.000.
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,185,117, Cl. 424-324.000.
Moskovsky Institut Stali i Splavov: *See*—
Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.
Moss, Mark W. Data card and data card reader combination. 4,184,632, Cl. 235-458.000.

Moss, Philip H.: *See*—
Waddill, Harold G.; and Moss, Philip H., 4,185,149, Cl. 528-111.000.
Moss, Robert G.: *See*—
Faehling, Francis L.; Billmeyer, Thomas F.; and Moss, Robert G., 4,184,475, Cl. 126-121.000.
Motor Wheel Corporation: *See*—
Hubbard, Harold C., 4,184,377, Cl. 73-733.000.
Motorola, Inc.: *See*—
Bennett, Charles E., 4,184,338, Cl. 62-2.000.
Bevacqua, Louis A., 4,184,379, Cl. 74-10.330.
Brown, Kenneth H., 4,185,243, Cl. 325-364.000.
Parker, Norman W., 4,185,171, Cl. 179-1.0GS.
Mounts, Frank W.; Netravali, Arun N.; and Walsh, Kenneth A., to Bell Telephone Laboratories, Incorporated. Run length encoding of facsimile signals. 4,185,302, Cl. 358-261.000.
Mounts, Frank W.; Netravali, Arun N.; and Walsh, Kenneth A., to Bell Telephone Laboratories, Incorporated. Run length encoding of facsimile pictures. 4,185,303, Cl. 358-261.000.
Mower, Morton M.: *See*—
Langer, Alois A.; Heilman, Marlin S.; Mower, Morton M.; and Mirowski, Mieczyslaw, 4,184,493, Cl. 128-419.00D.
MTU Motoren-und Turbinen-Union: *See*—
Zacherl, Anton, 4,184,720, Cl. 308-9.000.
Muller, Jurgen; and Farber, Heinrich, to AGFA-Gevaert Aktiengesellschaft. Apparatus for loading and unloading cassettes for X-ray films. 4,185,200, Cl. 250-471.000.
Mullins, Thomas J.: *See*—
Barrington, James E.; Williams, David L.; Hitchcock, Charles J.; and Mullins, Thomas J., 4,184,258, Cl. 433-88.000.
Munday, Theodore F.; Goldstein, David; and Walden, John, to FMC Corporation. Removal of phosphine contaminant from carbon monoxide gas mixtures. 4,185,079, Cl. 423-210.000.
Murayama, Tetsuo: *See*—
Oba, Hiroshi; Murayama, Tetsuo; and Otsuka, Shigenori, 4,184,871, Cl. 430-90.000.
Murayama, Yusuke: *See*—
Iijima, Takashi; Suzuki, Taizan; Murayama, Yusuke; Nakamura, Eitaro; and Ueno, Shinji, 4,184,857, Cl. 55-54.000.
Murphy, John C.; and Aamodt, Leonard C., to Johns Hopkins University, The. Self-calibrating photoacoustic apparatus for measuring light intensity and light absorption. 4,184,768, Cl. 356-326.000.
Murray, James E. Length and width-adjustable jump-rope-exercising apparatus. 4,184,677, Cl. 272-74.000.
Murry, Edward J.; and Brumbach, Joseph F., to Fibra-Sonics, Inc. Valued device for controlling vacuum in surgery. 4,184,510, Cl. 137-565.000.
Mushenko, Nikolai Y.; Larin, Gennady P.; Seredenko, Vladimir P.; and Svetikov, Ivan P. Oxygen-fuel cutting torch. 4,184,637, Cl. 239-419.300.
Myers, Thomas S.: *See*—
Puderbaugh, George; Pike, Robert W.; Myers, Thomas S.; and Frakes, James H., Jr., 4,185,072, Cl. 422-99.000.
Myreen, Bertel, to RA-Shipping Ltd. Oy. Rotary heat exchanger. 4,184,540, Cl. 165-92.000.
Nachbur, Hermann; and Maeder, Arthur, to Ciba-Geigy Corporation. Process for the manufacture of phosphorus-containing condensation products, the products and their use as flameproofing agents. 4,185,037, Cl. 260-583.00E.
Nagao, La Dee. Animal fumigating unit. 4,184,454, Cl. 119-160.000.
Nagasawa, Masao: *See*—
Kato, Minoru; and Nagasawa, Masao, 4,184,467, Cl. 123-148.00E.
Nagashima, Makoto: *See*—
Uchida, Tsutomu; Ono, Zenichi; Nagashima, Makoto; Tasaka, Eiji; Mitsui, Shigeo; and Nomura, Keiichi, 4,184,800, Cl. 414-56.000.
Nagata, Toshio, to Kohan Sendan Kikai Kabushiki Kaisha. Electromagnetic lifting device. 4,185,261, Cl. 335-291.000.
Nagele, Erwin, to Robert Bosch GmbH. Linear displacement flow rate meter. 4,184,466, Cl. 123-139.0AW.
Naito, Norinao: *See*—
Ogata, Mitsutoshi; and Naito, Norinao, 4,184,905, Cl. 156-221.000.
Nakabe, Ryuhei: *See*—
Nishikawa, Shoji; and Nakabe, Ryuhei, 4,185,296, Cl. 358-45.000.
Nakada, Akira: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, 4,184,401, Cl. 84-1.030.
Nakagawa, Tadashi; and Nemoto, Ichiro, to Seiko Koki Kabushiki Kaisha. Exposure control device of shutter for camera. 4,184,761, Cl. 354-267.000.
Nakajima, Kotaro. Crutch. 4,184,503, Cl. 135-68.000.
Nakajima, Nobuo, to Nippon Telegraph and Telephone Public Corporation. Quasioptical band rejection filter. 4,185,257, Cl. 333-208.000.
Nakamori, Shigeru; Yokozeki, Kenzo; and Mitsugi, Koji, to Ajinomoto Company Incorporated. Method for producing 4-formyl-2-aminobutyric acid (glutamic semialdehyde). 4,184,918, Cl. 435-106.000.
Nakamura, Eitaro: *See*—
Iijima, Takashi; Suzuki, Taizan; Murayama, Yusuke; Nakamura, Eitaro; and Ueno, Shinji, 4,184,857, Cl. 55-54.000.
Nakamura, Masayuki; and Sanuki, Setsuo, to Sumitomo Durez Company, Ltd. Method for manufacturing foundry sand cores and molds. 4,185,002, Cl. 260-42.540.
Nakamura, Norihiko; Itoh, Takaaki; and Misumi, Toshimi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Co., Ltd. Variable venturi type carburetor. 4,185,054, Cl. 261-44.00C.
Nakano, Masao: *See*—
Takemae, Yoshihiro; and Nakano, Masao, 4,185,320, Cl. 365-203.000.
Nakashima, Noriyuki, to Nippondenso Co., Ltd.; and Sharp Corporation. Display apparatus for motor vehicle. 4,185,266, Cl. 340-52.00F.
Nakatani, Munetsugu: *See*—
Sato, Hiroshi; Nakatani, Munetsugu; and Sugimori, Shuichi, 4,185,148, Cl. 526-348.100.
Nakatomi, Hiroshi: *See*—
Nomura, Jiro; Nakatomi, Hiroshi; and Yuasa, Yoshikatsu, 4,184,812, Cl. 417-407.000.
Nakazeki, Tugito; Kimata, Kei; Fukunaga, Syoichi; Kuroiwa, Takashi; and Morii, Seiji, to NTN Toyo Bearing Co., Ltd. Fuel injection device for internal combustion engines. 4,184,465, Cl. 123-139.0AW.
Nalco Chemical Company: *See*—
Payton, James H., 4,184,912, Cl. 162-72.000.
Namura, Hisaki; Ohta, Koichi; Takeda, Masao; and Minematsu, Kiyoshi, to Fujitsu Limited. Input level supervisory system for level regulator. 4,185,248, Cl. 330-2.000.
Narbro, Alf, deceased: *See*—
Borjesson, Anders; and Narbro, Alf, deceased, 4,184,582, Cl. 198-339.000.
Narbro, Karin G. E., Lennart Narbro, and Anna K. K. Narbro, legal representatives: *See*—
Borjesson, Anders; and Narbro, Alf, deceased, 4,184,582, Cl. 198-339.000.
Naureckas, Edward M.: *See*—
Standley, Wendell E.; and Naureckas, Edward M., 4,184,362, Cl. 73-40.700.
NCR Corporation: *See*—
Ward, William P., 4,185,324, Cl. 365-222.000.
Nelson, Ned H.; and Behar, Marvin L. Ball retrieving and storage bag. 4,184,707, Cl. 294-19.00A.
Nelson, Norman E.; and Cheasick, Robert C., to Minnesota Mining and Manufacturing Company. Plastic tape reel. 4,184,650, Cl. 242-71.800.
Nelson, Richard D., to United States of America, Air Force. Potential troughs for charge transfer devices. 4,185,292, Cl. 357-24.000.
Nemoto, Ichiro: *See*—
Nakagawa, Tadashi; and Nemoto, Ichiro, 4,184,761, Cl. 354-267.000.
Nepomnyaschy, Lev I.: *See*—
Petrovsky, Bogdan S.; Perlin, Samuil M.; Okunev, Anatoly A.; Nepomnyaschy, Lev I.; and Tepina, Nina I., 4,184,818, Cl. 417-569.000.
Netravali, Arun N.: *See*—
Mounts, Frank W.; Netravali, Arun N.; and Walsh, Kenneth A., 4,185,302, Cl. 358-261.000.
Mounts, Frank W.; Netravali, Arun N.; and Walsh, Kenneth A., 4,485,303, Cl. 358-261.000.
Neuray, Dieter: *See*—
Tacke, Peter; Neuray, Dieter; and Michael, Dietrich, 4,185,044, Cl. 525-1.000.
Nibby, Chester M., Jr.: *See*—
Johnson, Robert B.; and Nibby, Chester M., Jr., 4,185,323, Cl. 365-222.000.
Nicholson, Dick H., to General Connector Corporation. Air circulation apparatus. 4,184,415, Cl. 98-33.00A.
Nicholson, Margie M., to Rockwell International Corporation. Phthalocyanine electrochromic display. 4,184,751, Cl. 350-357.000.
Nicolas, Yves; and Tromelin, Jacques, to Schlumberger Technology Corporation. Anchoring apparatus for tools used in determining the stuck point of a conduit in a borehole. 4,184,546, Cl. 166-206.000.
Nicoloff, Nicholas; and Osuch, Eugene B., to United States of America, Navy. Dual loading and stowage apparatus. 4,184,801, Cl. 414-608.000.
Niimi, Koji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument utilizing data processing system. 4,184,400, Cl. 84-1.030.
Ninomiya, Masakazu: *See*—
Harada, Susumu; and Ninomiya, Masakazu, 4,184,460, Cl. 123-32.0EG.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, 4,184,401, Cl. 84-1.030.
Niimi, Koji, 4,184,400, Cl. 84-1.030.
Nippon Kokan Kabushiki Kaisha: *See*—
Ouchi, Chiaki; Okita, Tomoyoshi; and Matsumoto, Kazuaki, 4,184,898, Cl. 148-12.00F.
Nippon Soken, Inc.: *See*—
Inagaki, Mitsuo; Sasaya, Hideaki; and Kurahashi, Takashi, 4,184,804, Cl. 415-213.00R.
Nippon Steel Corporation: *See*—
Abe, Setsuo; Asakura, Tomomi; Shirato, Takeshi; and Miyake, Motomasa, 4,184,323, Cl. 60-39.030.
Nippon Telegraph and Telephone Public Corporation: *See*—
Nakajima, Nobuo, 4,185,257, Cl. 333-208.000.
Nippon Tsu Shin Kogyo K.K.: *See*—
Kerman, Stephen E.; Hamatani, Fumikazu; Tsutsumi, Fumio; and Tanaka, Yuji, 4,185,173, Cl. 179-99.00P.
Nippon Zeon Co., Ltd.: *See*—
Iijima, Takashi; Suzuki, Taizan; Murayama, Yusuke; Nakamura, Eitaro; and Ueno, Shinji, 4,184,857, Cl. 55-54.000.
Nippondenso Co., Ltd.: *See*—
Harada, Susumu; and Ninomiya, Masakazu, 4,184,460, Cl. 123-32.0EG.

Ishii, Yoshiya; Dohshita, Hidetoshi; Yamamoto, Yoshihisa; and Okazaki, Hiroshi, 4,184,459, Cl. 123-32.0AE.
Kato, Minoru; and Nagasawa, Masao, 4,184,467, Cl. 123-148.00E.
Nakashima, Noriyuki, 4,185,266, Cl. 340-52.00F.

Nishida, Chikashi: *See*—
Kiritani, Masaaki; Kanai, Mitsugu; Harada, Denzaburo; Nishida, Chikashi; Asanuma, Yoshiyuki; Ikeda, Kenji; and Masutani, Kouzi, 4,184,387, Cl. 74-720.500.

Nishikawa, Shoji; and Nakabe, Ryuhei, to Matsushita Electric Industrial Co., Ltd. Color television camera. 4,185,296, Cl. 358-45.000.

Nishizaki, Shinzo: *See*—
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,185,169, Cl. 179-1.0SM.

Nissan Motor Company, Limited: *See*—
Iizuka, Haruhiko, 4,184,470, Cl. 123-198.00F.
Matsui, Takayasu; and Temino, Satoshi, 4,184,713, Cl. 296-137.00R.
Ogata, Mitsutoshi; and Naito, Norinao, 4,184,905, Cl. 156-221.000.
Takeuchi, Tohru, 4,185,203, Cl. 290-40.00C.
Yamazaki, Takayuki; Izumi, Takahisa; and Kawasaki, Hajime, 4,185,074, Cl. 422-177.000.

Nix, Richard A.: *See*—
Moore, John B.; and Nix, Richard A., 4,184,578, Cl. 192-89.00B.

Noble, Maynard G., to General Electric Company. Flame insulative silicone compositions. 4,184,995, Cl. 260-37.0SB.

Nomura, Jiro; Nakatomi, Hiroshi; and Yuasa, Yoshikatsu, to Mitsubishi Jukogyo Kabushiki Kaisha. Exhaust gas turbine supercharger. 4,184,812, Cl. 417-407.000.

Nomura, Keiichi: *See*—
Uchida, Tsutomu; Ono, Zenichi; Nagashima, Makoto; Tasaka, Eiji; Mitsui, Shigeo; and Nomura, Keiichi, 4,184,800, Cl. 414-56.000.

Nordbeck, Carl P.: *See*—
Rynde, Leif G. R.; and Nordbeck, Carl P., 4,184,961, Cl. 210-232.000.

Nordberg, Krister: *See*—
Varis, Martti; and Nordberg, Krister, 4,184,506, Cl. 137-205.000.

Norland, Kenneth: *See*—
Ames, Allan E.; Bloom, Stanley M.; Hoffman, Arnold; and Norland, Kenneth, 4,185,144, Cl. 429-156.000.

Norlin Industries, Inc.: *See*—
Cox, Roger F., 4,184,726, Cl. 312-320.000.

Northrop Corporation: *See*—
Doehler, Oskar F.; Espinosa, Robert J.; and Groshart, Gary G., 4,185,225, Cl. 315-3.500.

Norton Company: *See*—
Sioui, Richard H.; and Carver, Edgar B., 4,184,854, Cl. 51-298.000.

Noshiro, Atsumi; Takamizawa, Minoru; and Inoue, Yoshio, to Dai Nippon Printing Co. Ltd.; and Shin-Etsu Chemical Co., Ltd. Method for the preparation of a planographic printing plate. 4,184,873, Cl. 430-258.000.

Nouaillant, Michel: *See*—
Pollozec, Francois A.; and Nouaillant, Michel, 4,184,891, Cl. 134-10.000.

Nouvertne, Werner: *See*—
Idel, Karsten-Josef; Frietag, Dieter; and Nouvertne, Werner, 4,185,009, Cl. 260-45.90R.

Novak, John R.: *See*—
Hall, Lawrence H.; and Novak, John R., 4,185,254, Cl. 331-94.50D.

Noyes Tire Co.: *See*—
Detwiler, Richard H., 4,185,056, Cl. 264-36.000.

Nozhkina, Alla V.: *See*—
Otopkov, Petr P.; Nozhkina, Alla V.; Kostikov, Valery I.; Andropov, Jury I.; Senchakov, Anatoly I.; Pesina, Anna Y.; and Kabanov, Alexandr V., 4,184,853, Cl. 51-295.000.

NTN Toyo Bearing Co., Ltd.: *See*—
Kimata, Kei; Yasuda, Yoshinobu; Yoshida, Isamu; and Saruta, Masahiro, 4,184,505, Cl. 137-117.000.
Nakazeki, Tugito; Kimata, Kei; Fukunaga, Syoichi; Kuroiwa, Takashi; and Morii, Seiji, 4,184,465, Cl. 123-139.0AW.

Nuesch, Jakob: *See*—
Knusel, Fritz; Nuesch, Jakob; Peter, Heinrich; and Rosselet, Armel, 4,185,091, Cl. 424-118.000.

Nugent, Adam, Jr.: *See*—
Hornbaker, Edwin D.; Nugent, Adam, Jr.; and Loechelt, Cecil P., 4,184,924, Cl. 202-175.000.

Nutt, Helmut, to Mikron Haesler S.A. Assembly machine. 4,184,236, Cl. 29-38.00R.

O.K. Machine and Tool Corp.: *See*—
Dvorak, Jarda, 4,184,389, Cl. 81-9.50B.

Oba, Hiroshi; Murayama, Tetsuo; and Otsuka, Shigenori, to Mitsubishi Chemical Industries Ltd. Photosensitive composition for electrophotography. 4,184,871, Cl. 430-90.000.

Oberg, Albert E., to Westinghouse Electric Corp. Cathode ray display tube with contrast enhancement panel. 4,185,220, Cl. 313-478.000.

O'Brien, Charles, Jr.: *See*—
Rabelos, Nicholas A., 4,184,567, Cl. 182-5.000.

Occidental Research and Engineering Ltd.: *See*—
Ellis, John D.; Crichton, George; Godwin, Millard C.; and Morris, George C., 4,185,075, Cl. 422-191.000.

Oce-van der Grinten N.V.: *See*—
Breuers, Theo P. C., 4,184,765, Cl. 355-75.000.

Oddo, Luigi G. Detecting water on boat exhaust manifold. 4,185,267, Cl. 340-59.000.

Odenwalder, Heinrich; and Wernicke, Ubbo, to AGFA-Gevaert, A.G. Photographic reversal process. 4,184,875, Cl. 430-407.000.

Oesterritter, Richard B.; and Steutermann, Edward M. Pipe cap. 4,184,516, Cl. 138-96.00R.

Ofusa, Masaatsu: *See*—
Yoshida, Hiroshi; and Ofusa, Masaatsu, 4,184,518, Cl. 139-35.000.

Ogassawara, Takeo; and Doi, Shunichi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Low noise level, pressure fluid spouting device. 4,184,638, Cl. 239-418.000.

Ogata, Mitsutoshi; and Naito, Norinao, to Nissan Motor Company, Limited; and Fukuoka Paper Company, Limited. Heat and sound insulator of curved corrugated paperboard and method of shaping same. 4,184,905, Cl. 156-221.000.

Ogawa, Nobuhisa: *See*—
Mochida, Ei; Ogawa, Nobuhisa; Shinkai, Hiroyuki; and Hashimoto, Masakatsu, 4,185,084, Cl. 424-1.000.

Ogden, William H., III: *See*—
Corby, Karl W.; Ogden, William H., III; and London, Harold, 4,184,281, Cl. 43-57.000.

Ohashi, Takehisa; Takahashi, Satomi; and Yoneda, Koji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for preparing 5-(2-thienyl)hydantoin. 4,185,153, Cl. 548-309.000.

Ohashi, Yoshie: *See*—
Sumitomo, Yasusuke; and Ohashi, Yoshie, 4,185,294, Cl. 357-54.000.

O'Hearne, Robert L.: *See*—
Blachly, Donald L.; Hochstatter, Brian R.; and O'Hearne, Robert L., 4,184,395, Cl. 83-486.100.

Ohkawara, Yasuo: *See*—
Kurihara, Toshio; Mizutani, Nagao; and Ohkawara, Yasuo, 4,184,780, Cl. 400-56.000.

Ohta, Koichi: *See*—
Namura, Hisaki; Ohta, Koichi; Takeda, Masao; and Minematsu, Kiyoshi, 4,185,248, Cl. 330-2.000.

Okamura, Mitsuyoshi: *See*—
Izawa, Koji; Komatsu, Kouichi; and Okamura, Mitsuyoshi, 4,185,271, Cl. 340-146.3AG.

Okazaki, Hiroshi: *See*—
Ishii, Yoshiya; Dohshita, Hidetoshi; Yamamoto, Yoshihisa; and Okazaki, Hiroshi, 4,184,459, Cl. 123-32.0AE.

Oki Electric Industry Co., Ltd.: *See*—
Ota, Toshimichi, 4,184,781, Cl. 400-124.000.

Okita, Tomoyoshi: *See*—
Ouchi, Chiaki; Okita, Tomoyoshi; and Matsumoto, Kazuaki, 4,184,898, Cl. 148-12.00F.

Okunev, Anatoly A.: *See*—
Petrovsky, Bogdan S.; Perlin, Samuil M.; Okunev, Anatoly A.; Nepomnyaschy, Lev I.; and Tepina, Nina I., 4,184,818, Cl. 417-569.000.

Olander, Walter K., to General Electric Company. Stabilized polyphenylene ether resin compositions containing hindered phenols. 4,184,999, Cl. 260-42.180.

Olin Corporation: *See*—
Kadija, Igor V., 4,184,939, Cl. 204-252.000.
Kleine, Charles A.; and Middleton, Verne L., 4,184,543, Cl. 165-170.000.

Olinkraft, Inc.: *See*—
Graser, Earl J.; and Killy, Earl J., 4,184,626, Cl. 229-40.000.

Olson, Gary L.; and Saucy, Gabriel, to Hoffmann-La Roche, Inc. Synthesis of vitamin E. 4,185,154, Cl. 560-60.000.

Olympus Optical Co., Ltd.: *See*—
Sato, Masaaki, 4,185,307, Cl. 360-94.000.
Suzuki, Yoshiro, 4,184,870, Cl. 430-53.000.
Uetake, Toshifumi, 4,184,747, Cl. 350-175.0ML.

Omura, Yoshimoto; Hara, Hideo; Kawashima, Isao; Sekiguchi, Keisuke; and Shino, Kuninori, to Sony Corporation. Tone arm assembly. 4,184,688, Cl. 274-15.00R.

O'Neill, Alan D.: *See*—
Eeles, Alan G.; and O'Neill, Alan D., 4,184,876, Cl. 430-505.000.

Ono, Masaharu; Kurokawa, Hirofumi; Yoshida, Kimio; Itado, Tadashi; and Uchihara, Yasuhiro, to Sumitomo Metal Mining Co.; and Fuji Sangijo Co., Ltd. Apparatus for shaping anodes. 4,184,235, Cl. 29-33.00R.

Ono, Zenichi: *See*—
Uchida, Tsutomu; Ono, Zenichi; Nagashima, Makoto; Tasaka, Eiji; Mitsui, Shigeo; and Nomura, Keiichi, 4,184,800, Cl. 414-56.000.

Onoda, Seiichi; Tanaka, Toshiki P.; and Sumi, Masao, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Optical fiber. 4,184,744, Cl. 350-96.330.

Onuma, Takeshi: *See*—
Hirao, Takashi; Takayanagi, Shigetoshi; Onuma, Takeshi; Sugawa, Toshio; and Inoue, Kaoru, 4,185,291, Cl. 357-22.000.

Oosterling, Pieter A.; and Van Zweeden, Adriaan, to Expert N.V. Baling device for agricultural crops. 4,184,312, Cl. 56-341.000.

Oosterling, Pieter A.; and Van Zweeden, Adriaan, to Expert N.V. Baling device for agricultural crops. 4,184,426, Cl. 100-100.000.

Orlando, Franklin P.: *See*—
Haney, Donald J.; and Orlando, Franklin P., 4,184,425, Cl. 100-100.000.

Orrling, Bengt: *See*—
Sebardt, Carl; and Orrling, Bengt, 4,184,353, Cl. 72-221.000.

Orth, Harold R., to International Harvester Company. Closed center draft control valve. 4,184,334, Cl. 60-445.000.

Orthman, Henry K., to Orthman Manufacturing, Inc. Steering device for row crop cultivator. 4,184,551, Cl. 172-26.000.

Orthman Manufacturing, Inc.: *See*—
Orthman, Henry K., 4,184,551, Cl. 172-26.000.

Oscarsson, Rolf A.; and Moore, Albert E., to Extracorporeal Medical Specialties, Inc. Totally wrapped coil permeation device and artificial kidney. 4,184,962, Cl. 210-232.000.

Oster, Eugene A., Jr., to Owens-Illinois, Inc. Structure for conversion of solar radiation to electricity and heat. 4,184,895, Cl. 136-89.0FC.

Osuch, Eugene B.: *See—*
Nicoloff, Nicholas; and Osuch, Eugene B., 4,184,801, Cl. 414-608.000.

Oswald ForstMaschinenfabrik und Apparatebauanstalt GmbH: *See—*
Esser, Gustav; and Marten, Wolfgang, 4,184,691, Cl. 279-5.000.

Ota, Toshimichi, to Oki Electric Industry Co., Ltd. Defect detector. 4,184,781, Cl. 400-124.000.

O'Toole, Lawrence P. Externally-programable switch. 4,185,260, Cl. 335-206.000.

Otopkov, Petr P.; Nozhkina, Alla V.; Kostikov, Valery I.; Andropov, Jury I.; Senchakov, Anatoly I.; Pesina, Anna Y.; and Kabanov, Alexandr V. Individual abrasive grains with a silicon-base alloy coating. 4,184,853, Cl. 51-295.000.

Otsuka, Shigenori: *See—*
Oba, Hiroshi; Murayama, Tetsuo; and Otsuka, Shigenori, 4,184,871, Cl. 430-90.000.

Ouchi, Chiaki; Okita, Tomoyoshi; and Matsumoto, Kazuaki, to Nippon Kokan Kabushiki Kaisha. Method of manufacturing high strength low alloys steel plates with superior low temperature toughness. 4,184,898, Cl. 148-12.00F.

Ouriet, Jean P.; Recule, Albert; and Roll, Georges, to Commisariat a l'Energie Atomique. Expanding mandrel and a machine for the use of said mandrel. 4,184,664, Cl. 254-50.200.

Owens-Corning Fiberglas Corporation: *See—*
Erickson, Thomas D.; and Hohman, Charles M., 4,184,861, Cl. 65-27.000.
McCort, Ralph E., 4,184,643, Cl. 241-87.000.

Owens-Illinois, Inc.: *See—*
Amberg, Christopher P.; and Belcher, Samuel L., 4,184,604, Cl. 220-254.000.
Amberg, Stephen W., 4,184,309, Cl. 53-399.000.
Oster, Eugene A., Jr., 4,184,895, Cl. 136-89.0FC.

Oxy Metal Industries Corporation: *See—*
Tomaszewski, Thaddeus W.; Creutz, Hans-Gerhard, deceased; and Clauss, Richard J., 4,184,929, Cl. 204-51.000.

Ozeki, Jiro, to Keihoku Seiki Manufacturing Company. Overhead projector. 4,184,754, Cl. 353-27.00R.

P. R. Mallory & Co. Inc.: *See—*
Frey, Robert L., 4,185,263, Cl. 338-301.000.

Pablos, Tomas C.: *See—*
Krol, Arthur J.; and Pablos, Tomas C., 4,184,252, Cl. 433-172.000.

Pagani, Salvatorino. Taking up machine for fabrics or products in continuous roll. 4,184,649, Cl. 242-66.000.

Pall, David B. Tubular filter elements with improved side seam seal. 4,184,966, Cl. 210-493.00B.

Palm, Roland; and Palm, Sven. Chip-firing unit. 4,184,436, Cl. 110-102.000.

Palm, Sven: *See—*
Palm, Roland; and Palm, Sven, 4,184,436, Cl. 110-102.000.

Pane, Francis C., Jr.; and Sepulveda, Domingo, to United Technologies Corporation. Louver construction for liner of gas turbine engine combustor. 4,184,326, Cl. 60-39.320.

Panevska, Mary A. Miniature manually operable musical instrument. 4,184,406, Cl. 84-408.000.

Papa, Lajos, to Radelkis Elektrokemiai Muszergyarto Szovetkezet. Diagnostic method and sensor device for detecting lesions in body tissues. 4,184,486, Cl. 128-642.000.

Papadopoulos, Christos G.: *See—*
Ginsburgh, Irwin; and Papadopoulos, Christos G., 4,184,548, Cl. 166-251.000.

Pareja, Ramon, to Lear Siegler, Inc. High pressure multi-cylinder pump. 4,184,817, Cl. 417-539.000.

Park-Ohio Industries, Inc.: *See—*
Laughlin, John R., 4,184,798, Cl. 414-16.000.

Parker, Curtis J.; and McGill, Kenneth H., to Dresser Industries, Inc. Valve guide for poppet valve. 4,184,814, Cl. 417-454.000.

Parker Manufacturing Company: *See—*
Ewig, John, 4,184,620, Cl. 227-8.000.

Parker, Norman W., to Motorola, Inc. Compatible single sideband system for AM stereo broadcasting. 4,185,171, Cl. 179-1.0GS.

Parks, Howard L.; and Kuronen, John M., to Bunker Ramo Corporation. Flexible connector cable. 4,184,729, Cl. 339-17.00F.

Parry, Harvey L., Jr.: *See—*
Smith, Gregory C.; Tokarz, Richard D.; Parry, Harvey L., Jr.; and Braun, Daniel J., 4,184,536, Cl. 165-1.000.

Pasco, Wayne D.; and Klug, Frederic J., to General Electric Company. Alumina core having a high degree of porosity and crushability characteristics. 4,184,885, Cl. 106-73.400.

Paul, John O.; and Babaoglu, Kerinchan, to Eastman Kodak Company. Device for determining ionic activity. 4,184,936, Cl. 204-195.00R.

Paull, Peter L.; and McGann, Rodney, to Texaco Inc. Partial oxidation process. 4,184,322, Cl. 60-39.020.

Paulucci, Jeno F.: *See—*
Ahlgren, David W., 4,184,421, Cl. 99-450.000.

Pavelko, Susan J.: *See—*
Bader, Henry; and Pavelko, Susan J., 4,185,155, Cl. 560-152.000.

Payton, James H., to Nalco Chemical Company. Pitch control method. 4,184,912, Cl. 162-72.000.

Pearce, Leonard J.: *See—*
Birt, Dennis C. P.; and Pearce, Leonard J., 4,185,143, Cl. 429-119.000.

Peck, Stephen R.: *See—*
United States of America, National Aeronautics and Space Administration; Peck, Stephen R.; and Benham, Jeffrey W., 4,185,164, Cl. 174-142.000.

Pedas, Vasily P.: *See—*
Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.

Peilet, Lester R. Brush or other implement and display card therefor. 4,184,279, Cl. 40-314.000.

Peng, Fred M.: *See—*
Kruse, Robert L.; and Peng, Fred M., 4,185,049, Cl. 525-84.000.

Pengilly, Brian W.; and Hahn, Maneung, to Goodyear Tire & Rubber Company, The. Flame retardant copolyester adhesive. 4,185,046, Cl. 525-444.000.

Pennwalt Corporation: *See—*
Kulischenko, Walter; and Ellis, William C., 4,184,576, Cl. 192-41.00R.

Pepe, Russell J.: *See—*
Brown, Jack; Coughenour, Donald J.; and Pepe, Russell J., 4,184,441, Cl. 112-158.00E.

Pepin, David E. J. Mood-indicating jewelry with changeable display. 4,184,344, Cl. 63-31.000.

Perey Manufacturing Co., Inc.: *See—*
Lambertson, William A., 4,184,289, Cl. 49-42.000.

Perkins, Alfred G. Trowel for pipe lining material. 4,184,830, Cl. 425-262.000.

Perlin, Samuil M.: *See—*
Petrovsky, Bogdan S.; Perlin, Samuil M.; Okunev, Anatoly A.; Nepomnyaschy, Lev I.; and Tepina, Nina I., 4,184,818, Cl. 417-569.000.

Perret, Ludwig A.; and Miller, James A., to Bell & Howell Company. Video information recording and reproducing methods and apparatus. 4,185,305, Cl. 360-33.000.

Pesina, Anna Y.: *See—*
Otopkov, Petr P.; Nozhkina, Alla V.; Kostikov, Valery I.; Andropov, Jury I.; Senchakov, Anatoly I.; Pesina, Anna Y.; and Kabanov, Alexandr V., 4,184,853, Cl. 51-295.000.

Pessel, Erich: *See—*
Gemein, Rudolf; and Pessel, Erich, 4,184,721, Cl. 308-9.000.

Pestellini, Vittorio: *See—*
Meli, Alberto; Bianchini, Claudio; del Soldato, Piero; Ghelardoni, Mario; Pestellini, Vittorio; and Volterra, Giovanna, 4,185,124, Cl. 424-324.000.

Pet Incorporated: *See—*
Friedman, Donald E., 4,184,341, Cl. 62-175.000.

Peter, Heinrich: *See—*
Knusel, Fritz; Nuesch, Jakob; Peter, Heinrich; and Rosselet, Armel, 4,185,091, Cl. 424-118.000.

Peterson, Albert C. Sedimentation device and method for purifying waste water. 4,184,954, Cl. 210-83.000.

Peterson, Wesley R.: *See—*
Brown, Jack; Herr, John A.; Jaffe, Wolfgang; and Peterson, Wesley R., 4,184,443, Cl. 112-225.000.

Petraglia, Vincent J.: *See—*
Goller, Glen J.; Petraglia, Vincent J.; and Dews, George, 4,185,131, Cl. 427-113.000.

Petrie, John A. Beveled retaining ring and method for constructing the same. 4,184,242, Cl. 29-400.00R.

Petrolite Corporation: *See—*
Thompson, Neil E. S., 4,185,005, Cl. 260-45.80N.

Petrov, Viktor M.: *See—*
Pevzner, Lev V.; Ustkachkintsev, Alexandr N.; Yakobson, Boris V.; Timofeev, Andrei V.; Furman, Anna A.; Vaskanov, Sergei E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M., 4,184,972, Cl. 252-62.540.

Petrovsky, Bogdan S.; Perlin, Samuil M.; Okunev, Anatoly A.; Nepomnyaschy, Lev I.; and Tepina, Nina I., to Dizelny Zavod "Dvigatel Revoljutsii". Valve for piston compressors and pumps. 4,184,818, Cl. 417-569.000.

Pevzner, Lev V.; Ustkachkintsev, Alexandr N.; Yakobson, Boris V.; Timofeev, Andrei V.; Furman, Anna A.; Vaskanov, Sergei E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M. Magnetodielectric material. 4,184,972, Cl. 252-62.540.

Peyer, Christoph, to U.S. Philips Corporation. Electrocardiograph. 4,184,487, Cl. 128-710.000.

Peytavin, Pierre, to Creusot-Loire-Vallourec. Tilting device for vertically cast metal sections. 4,184,534, Cl. 164-269.000.

Pfau, Jean, to Ateliers des Charmilles S.A. Apparatus and method for controlling the intermittent retraction of the electrode tool in an EDM machine. 4,185,184, Cl. 219-69.00G.

Pfizer Inc.: *See—*
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,185,116, Cl. 424-319.000.
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; and Morville, Malcolm, 4,185,117, Cl. 424-324.000.

Pflueger, Phillip G.: *See—*
Fischer II, Frederic P.; and Pflueger, Phillip G., 4,185,270, Cl. 340-146.30E.

Pharmacia Diagnostics AB: *See—*
Hallgren, Henning R.; and Wide, Leif E., 4,184,847, Cl. 23-230.00B.

Philip Morris, Inc.: *See—*
Rainer, Norman B.; and Wilson, Peter A., 4,184,495, Cl. 131-9.000.
Phillips Petroleum Company: *See—*
Kinney, Alfred W., 4,184,613, Cl. 222-145.000.
Mathis, Ronald D., 4,185,004, Cl. 260-45.8NT.
Pick, George G., to AM International, Inc. Displayed keyboard indicia. 4,185,282, Cl. 340-711.000.
Piekarski, Arthur J.: *See—*
Anderson, Rodger O.; and Piekarski, Arthur J., 4,184,797, Cl. 416-95.000.
Pieper, Helmut, to Sorg GmbH & Co. KG. Glass melting furnace and method. 4,184,863, Cl. 65-135.000.
Piesch, Steffen; and Wille, Herbert, to Cassella Aktiengesellschaft. N-substituted ε-caprolactams. 4,185,017, Cl. 260-239.30R.
Pignolet, Louis, to Rexroth-Sigma. Fluid distributing devices, particularly for hydraulic remote control. 4,184,512, Cl. 137-596.000.
Pike, Robert W.: *See—*
Puderbaugh, George; Pike, Robert W.; Myers, Thomas S.; and Frakes, James H., Jr., 4,185,072, Cl. 422-99.000.
Pilgram, Kurt H. G.; and Skiles, Richard D., to Shell Oil Company. Cycloalkanecarboxanilide derivative herbicides. 4,184,867, Cl. 71-98.000.
Pinior, Gernot, to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik. Monitoring systems. 4,184,770, Cl. 356-430.000.
Plaskolite, Inc.: *See—*
Casamayor, Jorge, 4,184,297, Cl. 52-202.000.
Plessey Handel und Investments AG: *See—*
Wren, John P.; and Buckner, Ian W., 4,184,687, Cl. 274-13.00R.
Plotscher, Hans: *See—*
Gerber, Hermann; and Plotscher, Hans, 4,185,214, Cl. 310-51.000.
Podaras, William N.; and Berta, Joseph M., to Tabernacle of God, Inc., The. Barbecue oven. 4,184,420, Cl. 99-427.000.
Pohl, Walter J., to General Electric Company. Variable restrictor for a refrigeration system. 4,184,342, Cl. 62-511.000.
Poisson, Norman D., to Gillette Company, The. Safety razor. 4,184,247, Cl. 30-59.000.
Polak, Josef, to Chemoprojekt, projektova, inzenyrska a konzultacni organizace. Apparatus for reducing electrolytic interference with metal structures. 4,184,938, Cl. 204-196.000.
Polaroid Corporation: *See—*
Ames, Allan E.; Bloom, Stanley M.; Hoffman, Arnold; and Norland, Kenneth, 4,185,144, Cl. 429-156.000.
Bader, Henry; and Pavelko, Susan J., 4,185,155, Cl. 560-152.000.
Land, Edwin H., 4,184,745, Cl. 350-126.000.
Land, Edwin H.; and Biber, Conrad H., 4,184,756, Cl. 354-33.000.
Whiteside, George D., 4,184,760, Cl. 354-230.000.
Poletto, John F.: *See—*
Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,185,032, Cl. 260-506.000.
Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,185,033, Cl. 260-506.000.
Polk, Donald E.: *See—*
Bedell, John R.; Hemmat, Naim; and Polk, Donald E., 4,184,532, Cl. 164-64.000.
Pollozec, Francois A.; and Nouaillant, Michel, to Societe Nationale des Poudres et Explosifs. Process for washing a solid substance impregnated with a liquid substance. 4,184,891, Cl. 134-10.000.
Polukhin, Petr I.: *See—*
Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.
Polzer, Erich; and Schmolz, Hubert, to Voith Getriebe KG. Hydrodynamic reversing transmission. 4,184,330, Cl. 60-335.000.
Pomorin, Karl-Heinz: *See—*
Gunther, Alphons; Pomorin, Karl-Heinz; Spiess, Hans P.; and Ullrich, Georg J., 4,184,241, Cl. 29-278.000.
Ponsinet, Gerard: *See—*
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,185,107, Cl. 424-263.000.
Ducep, Jean-Bernard; Farge, Daniel; Ponsinet, Gerard; and Reisdorf, Daniel, 4,185,111, Cl. 424-283.000.
Ponte, Raymon. Toaster accessory. 4,184,419, Cl. 99-402.000.
Poppe, Wassily: *See—*
Caspari, Gunter; and Poppe, Wassily, 4,185,008, Cl. 260-45.80A.
Porter, John R., to Porter-Way Harvester Mfg. Co. Inc. Trailer for transporting elongated apparatus having flanged members along each side. 4,184,694, Cl. 410-44.000.
Porter-Way Harvester Mfg. Co. Inc.: *See—*
Porter, John R., 4,184,694, Cl. 410-44.000.
Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., to Moskovsky Institut Stali i Splavov. Method for pilger rolling of tubes and mill for effecting same. 4,184,352, Cl. 72-208.000.
Potomac Applied Mechanics, Inc.: *See—*
Stubbings, James H., 4,184,357, Cl. 72-391.000.
Pottorff, Donald R.: *See—*
Bricker, Jack E.; Galmiche, Rene G.; and Pottorff, Donald R., 4,184,573, Cl. 188-170.000.
Potts, Vinson S., to Crown Cork & Seal Company, Inc. Easy open can end. 4,184,607, Cl. 220-273.000.
Poubeau, Pierre, to Societe Nationale Industrielle Aerospatiale. Device for temporarily rigidly uniting a free circular element with a fixed circular element. 4,184,572, Cl. 188-74.000.
PPG Industries, Inc.: *See—*
Carlin, William W., 4,184,941, Cl. 204-292.000.
Graham, Roy R., 4,185,138, Cl. 428-391.000.
Reese, Thomas J., 4,184,864, Cl. 65-285.000.
Temple, Chester S., 4,185,066, Cl. 264-257.000.
Pracht, Gunther: *See—*
Megna, Salvatori G.; and Pracht, Gunther, 4,184,249, Cl. 30-341.000.
Prahl nee Strassmeier, Gertraud: *See—*
Schaper, Gustav; and Prahl nee Strassmeier, Gertraud, 4,184,214, Cl. 3-36.000.
Prahl, Traudl: *See—*
Schaper, Gustav; and Prahl nee Strassmeier, Gertraud, 4,184,214, Cl. 3-36.000.
Preda, Vasile: *See—*
Grosu, Stefan; and Preda, Vasile, 4,185,217, Cl. 310-185.000.
Presbrey, R. B. Visual aid to broadcasted golf games. 4,184,270, Cl. 35-7.00R.
Preston, Edward G.: *See—*
Stewart, David B.; and Preston, Edward G., 4,184,619, Cl. 225-94.000.
Preussag Aktiengellschaft: *See—*
Winnacker, Helmut, 4,184,758, Cl. 354-64.000.
Preway Inc.: *See—*
Faehling, Francis L.; Billmeyer, Thomas F.; and Moss, Robert G., 4,184,475, Cl. 126-121.000.
Price, John G. Sweeper bristle element. 4,184,223, Cl. 15-179.000.
Price, Robert C.; and Harris, V. C. Exhaust muffler. 4,184,565, Cl. 181-252.000.
Prinz, Michel, to Commissariat a l'Energie Atomique. Pumping ejector. 4,184,806, Cl. 417-160.000.
Procter & Gamble Company, The: *See—*
Draper, Ellsworth R., Jr., 4,184,970, Cl. 252-8.800.
Logan, Ted J., 4,185,027, Cl. 260-415.000.
Propst, Paul L.: *See—*
Propst, Robert L.; and Propst, Paul L., 4,184,227, Cl. 16-35.00R.
Propst, Robert L.; and Propst, Paul L. Sanitary caster. 4,184,227, Cl. 16-35.00R.
Prostyakov, Alexandr A.: *See—*
Butseniex, Imant E.; Levina, Margarita Y.; Prostyakov, Alexandr A.; Stolov, Mikhail Y.; Sharamkin, Vladimir I.; and Scherbinin, Eduard V., 4,185,159, Cl. 13-29.000.
Proud, Joseph M.; Auborn, James J.; and Bessett, Richard A., to GTE Laboratories Incorporated. High voltage control devices. 4,185,206, Cl. 307-117.000.
Puderbaugh, George; Pike, Robert W.; Myers, Thomas S.; and Frakes, James H., Jr., to Diemolding Corporation. Orthopedic cement mixer. 4,185,072, Cl. 422-99.000.
Pulliam, Fred L.: *See—*
Pulliam, James B.; Pulliam, Fred L.; and Kelly, Kenneth M., 4,184,474, Cl. 126-121.000.
Pulliam, James B.; Pulliam, Fred L.; and Kelly, Kenneth M. Fireplace draft control damper. 4,184,474, Cl. 126-121.000.
Pullman Incorporated: *See—*
Green, Daniel R., 4,184,433, Cl. 105-327.000.
Purvis, Thomas A., to Standard Products Company, The. Seal for air supported roof structures. 4,184,294, Cl. 52-2.000.
Putz, Patricia J.; Lishka, Marie A.; and Latos, Edwin J., to UOP Inc. Filter material for removal of ozone from the atmosphere. 4,184,983, Cl. 252-466.0PT.
Quaker Oats Company, The: *See—*
Kozinski, Allen A., 4,185,022, Cl. 260-347.800.
Spengler, Duane; and Darling, David S., 4,184,286, Cl. 46-205.000.
Quatrini, L. Rita; and MacInnis, Martin B., to GTE Sylvania Incorporated. Extraction process for recovery of rhenium. 4,185,078, Cl. 423-49.000.
Queen, Charles C., Jr., to United States of America, Energy. Thermally actuated wedge block. 4,184,665, Cl. 254-104.000.
R. J. Reynolds Tobacco Company: *See—*
Baker, Max N.; and Martin, Julian R., 4,184,305, Cl. 53-50.000.
RA-Shipping Ltd. Oy: *See—*
Myreen, Bertel, 4,184,540, Cl. 165-92.000.
Rabelos, Nicholas A., to Clark, Thomas G.; Clary, Kenneth B.; England, J. Melvin; O'Brien, Charles, Jr.; and Rabelos, Nicholas A. Fire escape device with rope loop clamp. 4,184,567, Cl. 182-5.000.
Rabin, Baruch: *See—*
Blas, Amos; and Rabin, Baruch, 4,184,899, Cl. 148-15.500.
Radelkis Elektrokemiai Muszergyarto Szovetkezet: *See—*
Papa, Lajos, 4,184,486, Cl. 128-642.000.
Radeva, Maria G.: *See—*
Stoev, Stoycho M.; Mitrushev, Marin D.; Boshilov, Grozdan T.; and Radeva, Maria G., 4,184,965, Cl. 210-388.000.
Radin, Vladimir I.: *See—*
Pevzner, Lev V.; Ustkachkintsev, Alexandr N.; Yakobson, Boris V.; Timofeev, Andrei V.; Furman, Anna A.; Vaskanov, Sergei E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M., 4,184,972, Cl. 252-62.540.
Radlove, Sol B. Dietetic cake mix. 4,185,127, Cl. 426-554.000.
Raether, Wolfgang: *See—*
Cuntze, Ulrich; Raether, Wolfgang; Reul, Bernhard; and Ross, Gerhard, 4,185,098, Cl. 424-199.000.

Ragle, Herbert U.: *See*—
Gyi, Ko Ko; and Ragle, Herbert U., 4,185,311, Cl. 360-99.000.
Raidel, John E. Mounting structure for vehicle suspensions. 4,184,698, Cl. 280-686.000.
Rainer, Norman B.; and Wilson, Peter A., to Philip Morris, Inc. Process for incorporating flavorant into cellulosic substrates and products produced thereby. 4,184,495, Cl. 131-9.000.
Raleigh, Edward: *See*—
Kushner, Gerald J.; and Raleigh, Edward, 4,184,661, Cl. 251-82.000.
Ralev, Rali V.: *See*—
Vassilev, Grigor D.; Yordanov, Zdravko A.; Stoyanov, Lyubomir A.; Ralev, Rali V.; and Kostov, Kosta M., 4,184,363, Cl. 73-61.10R.
Rampe, John F., to Rampe Research. Unloading system for bowl-type vibratory finishing machine. 4,184,290, Cl. 51-163.200.
Rampe Research: *See*—
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Rapp, Karl; Brett, Hans; Tyrolt, Alex; and Stabentheiner, Gabriel, to Robert Bosch GmbH. Angled-edge controlled fuel injection pump for internal combustion engines. 4,184,816, Cl. 417-499.000.
Raque, Glenn F.; and Robinson, Edward A. Slicer device. 4,184,423, Cl. 99-537.000.
Rasberger, Michael; and Spivack, John D., to Ciba-Geigy Corporation. Cyclic phosphonite stabilizers. 4,185,006, Cl. 260-45.80N.
Rasberger, Michael; and Karrer, Friedrich, to Ciba-Geigy Corporation. Barbituric acid derivatives containing a phenolic moiety and/or a hindered amine moiety. 4,185,007, Cl. 260-45.80N.
Rass, Hans A. Self-piloting lawn mower. 4,184,559, Cl. 180-131.000.
Ratliff, George D., Jr. Greenhouse with stored solar energy capability. 4,184,479, Cl. 126-424.000.
Rau, Karl: *See*—
Schlick, Horst; and Rau, Karl, 4,184,370, Cl. 73-313.000.
Rauenhorst, George W. Ventilating heat exchanger for barns. 4,184,538, Cl. 165-66.000.
Raushenbakh, Igor M.: *See*—
Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.
Raymond International, Inc.: *See*—
Colle, Ervin R., 4,184,788, Cl. 405-19.000.
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Brown, William C., Jr.; Crete, Paul G.; Sullivan, Philip L.; and Williamson, James, 4,185,251, Cl. 330-279.000.
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Bloom, Allen; and Hung, Ling K., 4,184,750, Cl. 350-349.000.
Harford, Jack R., 4,185,299, Cl. 358-153.000.
Kucharewski, Nicholas, 4,185,211, Cl. 307-351.000.
Leidich, Arthur J., 4,185,212, Cl. 307-362.000.
Stewart, Roger G., 4,185,319, Cl. 365-185.000.
Zuk, Borys, 4,185,210, Cl. 307-232.000.
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Cook, Richard J.; and Reade, Richard, 4,184,802, Cl. 414-680.000.
Rechmeier, Helmuth, to Rohrbach, Rudolf; and Rohrbach, Gerhard. Method of reducing the sulfur oxide content of combustion gases resulting from combustion of sulfur-containing fossil fuels. 4,185,080, Cl. 423-242.000.
Recule, Albert: *See*—
Ouriet, Jean P.; Recule, Albert; and Roll, Georges, 4,184,664, Cl. 254-50.200.
Redco, Inc.: *See*—
Jones, Frank W., 4,184,397, Cl. 83-874.000.
Redman, Ronald E., to Kawneer Company, Inc. Lever arm assembly. 4,184,382, Cl. 74-522.000.
Reed, Ramsey G.; and Johanson, Roy W., to Leco Corporation. Closure and flash breaking apparatus for metallographic specimen molding device. 4,184,826, Cl. 425-110.000.
Reedy, Charles E.: *See*—
Rollins, Dallas W.; Behle, Gunter R.; and Reedy, Charles E., 4,184,663, Cl. 251-144.000.
Rees, Herbert, to Husky Injection Molding Systems Ltd. Multiple mold for producing elongate tubular articles. 4,184,836, Cl. 425-588.000.
Reese, Thomas J., to PPG Industries, Inc. Apparatus for fabricating sharply bent glass sheets. 4,184,864, Cl. 65-285.000.
Regan, John F., to Wescom Switching, Inc. Voice frequency RC active filter. 4,185,250, Cl. 330-107.000.
Regan, Robert J., to GTE Laboratories Incorporated. Electrodeless light source with self-contained excitation source. 4,185,228, Cl. 315-39.000.
Rehse, Denis: *See*—
McKim, James B., Jr.; and Rehse, Denis, 4,185,249, Cl. 330-85.000.
Reif, Phillip G.: *See*—
Lackner, Anne M.; and Reif, Phillip G., 4,184,908, Cl. 156-636.000.
Rein, Charles R., to United States of America, Navy. Electronic card mount and heat transfer assembly for underwater vehicles. 4,184,539, Cl. 165-80.00B.
Reinehr, Ulrich; Herbertz, Toni; and Jungverdorben, Hermann-Josef, to Bayer Aktiengesellschaft. Process for spinning hydrophilic acrylic fibers with improved coloring response to dyes. 4,185,058, Cl. 264-49.000.
Reinehr, Ulrich; and Jungverdorben, Hermann-Josef, to Bayer Aktiengesellschaft. Process for the preparation of hydrophilic fibres and filaments from synthetic polymers. 4,185,059, Cl. 264-51.000.
Reischl, Artur; and Zenner, Armin, to Bayer Aktiengesellschaft. Process for the preparation of stable dispersions of polyisocyanate-polyaddition products in a hydroxyl containing compound as dispersing agent. 4,184,990, Cl. 260-29.2TN.
Reisdorf, Daniel: *See*—
Ducep, Jean-Bernard; Farge, Daniel; Ponsinet, Gerard; and Reisdorf, Daniel, 4,185,111, Cl. 424-283.000.
Reits, Bernard J.: *See*—
Witteman, Wilhelmus J.; and Reits, Bernard J., 4,185,255, Cl. 331-94.5PE.
Research Association for the Paper and Board, Printing and Packaging Industries, The: *See*—
Hawkes, Charles V., 4,184,218, Cl. 11-1.0AD.
Reul, Bernhard: *See*—
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Reuter, Herbert: *See*—
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Revlon, Inc.: *See*—
DeFazio, August; and Kamen, Melvin E., 4,184,292, Cl. 51-235.000.
Seidler, David, 4,184,499, Cl. 132-75.600.
Rexroth-Sigma: *See*—
Pignolet, Louis, 4,184,512, Cl. 137-596.000.
Reynolds Metals Company: *See*—
Scannell, Edward P., 4,185,213, Cl. 310-11.000.
Rezy, Bernard J., Jr., to Teledyne Industries, Inc. Air cooled exhaust valve. 4,184,328, Cl. 60-305.000.
Rhone-Poulenc Industries: *See*—
Bourzat, Jean-Dominique; Farge, Daniel; Leger, Andre; and Ponsinet, Gerard, 4,185,107, Cl. 424-263.000.
Ducep, Jean-Bernard; Farge, Daniel; Ponsinet, Gerard; and Reisdorf, Daniel, 4,185,111, Cl. 424-283.000.
Machurat, Jean; and Vrisakis, Georges, 4,185,001, Cl. 260-42.370.
Richards, Cecil G., to B. C. Richards & Co. Pty. Ltd. Ball valve. 4,184,507, Cl. 137-375.000.
Richards, Charles D. Earth dam protective covering. 4,184,786, Cl. 405-108.000.
Richards, William; and Grolman, Bernard, to American Optical Corporation. Instrument illuminator. 4,184,752, Cl. 351-16.000.
Riemann, Werner: *See*—
Schindler, Johannes G.; and Riemann, Werner, 4,184,935, Cl. 204-195.00F.
Riesland, David H.; Hammer, Edward E.; and Lemmers, Eugene, to General Electric Company. High efficiency ballast system for gaseous discharge lamps. 4,185,233, Cl. 315-276.000.
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Binder, Rolf; and Staheli, Paul, 4,184,611, Cl. 222-1.000.
Rigbey, Leonard J.: *See*—
Hatchett, Michael R.; and Rigbey, Leonard J., 4,185,314, Cl. 360-133.000.
Riggs, Donnie E. Athletic shoe for track competition and interval training. 4,184,272, Cl. 36-129.000.
Riken Keikinzoku Kogyo Kabushiki Kaisha: *See*—
Takahashi, Toshiro; and Ikegaya, Masashi, 4,184,927, Cl. 204-33.000.
Riso Kagaku Corporation: *See*—
Hosoya, Tadamichi, 4,184,428, Cl. 101-128.400.
Ritchey, Eugene B. Ear tag locking device. 4,184,453, Cl. 119-156.000.
Ritsko, Joseph E.; Acla, Howard L.; Vanderpool, Clarence D.; Scheithauer, William, Jr.; and Harris, Geoffrey L., to GTE Sylvania Incorporated. Method for producing extra fine cobalt metal powder. 4,184,868, Cl. 75-0.500.
Rivin, Evgeny I. Gears having resilient coatings. 4,184,380, Cl. 74-461.000.
Robert Bosch GmbH: *See*—
Hess, Heinz; and Hausdorfer, Michael, 4,185,295, Cl. 358-22.000.
Nagele, Erwin, 4,184,466, Cl. 123-139.0AW.
Rapp, Karl; Brett, Hans; Tyrolt, Alex; and Stabentheiner, Gabriel, 4,184,816, Cl. 417-499.000.
Uebel, Phillip, 4,184,787, Cl. 404-117.000.
Robinson, Edward A.: *See*—
Raque, Glenn F.; and Robinson, Edward A., 4,184,423, Cl. 99-537.000.
Robinson, William G.; and Fellows, Horace G., to Allied Insulators, Limited. Kiln furniture, particularly crank structures. 4,184,841, Cl. 432-258.000.
Rocci, Renato: *See*—
Melindo, Flavio; and Rocci, Renato, 4,185,172, Cl. 179-15.0BY.
Rockwell International Corporation: *See*—
Nicholson, Margie M., 4,184,751, Cl. 350-357.000.
Street, Dana C., 4,185,209, Cl. 307-218.000.
Thompson, Robert B.; and Fortunko, Christopher M., 4,184,374, Cl. 73-640.000.
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Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.

Roe, Geoffrey E.; and Thorpe, Terrance E., to Victoria University of Manchester. Motorcycle front fork assembly. 4,184,695, Cl. 280-277.000.

Roeschlau, Peter; Bernt, Erich; and Gruber, Wolfgang, to Boehringer Mannheim GmbH. Process and reagent for determining cholesterol. 4,184,921, Cl. 435-11.000.

Roessler, Peter: *See*—
Kabbe, Hans-Joachim; and Roessler, Peter, 4,185,112, Cl. 424-283.000.

Rogahn, Dino J. Bubble producing flying toy. 4,184,284, Cl. 46-8.000.

Rogers, David H. Electric water heating apparatus. 4,185,187, Cl. 219-306.000.

Rogerson, Brent. Mechanical arm wrestler. 4,184,675, Cl. 272-67.000.

Rogler, Walter: *See*—
Kreuzburg, Gerhard; Lenz, Arnold; and Rogler, Walter, 4,185,029, Cl. 260-448.80A.

Rohm and Haas Company: *See*—
Albright, Robert L., 4,185,077, Cl. 423-7.000.
Dabby, Sabah S.; and Zaganiaris, Emannuel J., 4,184,948, Cl. 210-25.000.
Downing, Harvey T., 4,184,383, Cl. 74-571.00R.
Singh, Udai P.; and Lutz, John T., Jr., 4,184,993, Cl. 260-31.20R.

Rohrbach, Gerhard: *See*—
Rechmeier, Helmuth, 4,185,080, Cl. 423-242.000.

Rohrbach, Rudolf: *See*—
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Roll, Georges: *See*—
Ouriet, Jean P.; Recule, Albert; and Roll, Georges, 4,184,664, Cl. 254-50.200.

Rollins, Dallas W.; Behle, Gunter R.; and Reedy, Charles E., to ACF Industries, Incorporated. Combination tank car valve skid and valve seat. 4,184,663, Cl. 251-144.000.

Rood, Leonard D. Fire retardant insulation. 4,184,311, Cl. 53-434.000.

Rosen, Melvin H., to Ciba-Geigy Corporation. 1-Benzothiepin-4-carboxamides. 4,185,109, Cl. 424-275.000.

Rosenbloom, Howard: *See*—
Cutler, Jerome J., 4,184,345, Cl. 64-28.00R.

Rosendahl, Bengt, to AB Sture Ljungdahl. Apparatus for removing flat elements from a stack thereof. 4,184,670, Cl. 271-12.000.

Ross, Frank E., to Maytag Company, The. Access door lock system. 4,184,704, Cl. 292-201.000.

Ross, Gerhard: *See*—
Cuntze, Ulrich; Raether, Wolfgang; Reul, Bernhard; and Ross, Gerhard, 4,185,098, Cl. 424-199.000.

Rosselet, Armel: *See*—
Knusel, Fritz; Nuesch, Jakob; Peter, Heinrich; and Rosselet, Armel, 4,185,091, Cl. 424-118.000.

Rossiter, Paul H.; and Loetterle, Marvin F., to W Bar E, Inc. Dewatering of plastic materials with controlled gaseous injection. 4,185,057, Cl. 264-40.100.

Roth, Jacques. Plant-growing device with a water reservoir. 4,184,287, Cl. 17-81.000.

Roth, Norbert: *See*—
Schmidt, Willi J.; and Roth, Norbert, 4,185,068, Cl. 264-284.000.

Rourke, Arthur G. Electrical cable unwinder. 4,184,647, Cl. 242-54.00R.

Roussel Uclaf: *See*—
Taylor, John B.; and Harrison, Derek R., 4,185,102, Cl. 424-246.000.
Virrion, Aime; and Franson, Claude, 4,185,113, Cl. 424-286.000.

Rovee, David T.; Marvel, John R.; and Mezick, James A., to Johnson & Johnson. Topical anti-inflammatory drug therapy. 4,185,100, Cl. 424-240.000.

Rovin, Herman, to Automatech Industries, Inc. Bobbin spool. 4,184,652, Cl. 242-118.200.

Rowley, Robert J.: *See*—
Allen, David; and Rowley, Robert J., 4,184,708, Cl. 294-67.00R.

Rowswell, Malcolm D.: *See*—
Crawshay, Richard; and Rowswell, Malcolm D., 4,184,581, Cl. 198-308.000.

Rubin, Sol R.; and Gates, Raymond D., to Masco Corporation. Acoustic mounting for valve assembly. 4,184,703, Cl. 285-49.000.

Rueggeberg, Werner, to Armstrong Cork Company. Microwave oven apparatus. 4,185,182, Cl. 219-10.55F.

Ruesch, Peter, to Aktiengesellschaft Adolph Saurer. Device for connecting an exhaust manifold through the cylinder head of a multi-cylinder internal combustion engine. 4,184,329, Cl. 60-322.000.

Ruskin Manufacturing Company: *See*—
Kasper, Gordon, 4,184,509, Cl. 137-526.000.

Russ, James J. Method for making methane from metal carbides. 4,184,852, Cl. 48-197.00R.

Ryan, Rodger; and Timmerman, Walter J. H., to United States of America, Energy. Valve system incorporating single failure protection logic. 4,184,514, Cl. 137-861.000.

Rylewski, Eugeniusz M. Fluid rotating machine with multiple displacement. 4,184,813, Cl. 417-440.000.

Rynde, Leif G. R.; and Nordbeck, Carl P., to Tecator Instrument AB. Extraction apparatus, preferably for analyzing purposes. 4,184,961, Cl. 210-232.000.

Sader, Gabriel. Process for separating hydrocarbon pollution from a hydroorganic medium. 4,184,949, Cl. 210-43.000.

Saeki, Taiichi: *See*—
Mitsuda, Katsumi; Yamamoto, Katsuhiko; Adachi, Katsumi; Tsujihara, Susumu; Saeki, Taiichi; and Takeda, Minoru, 4,185,301, Cl. 358-242.000.

Sagami Chemical Research Center: *See*—
Uehara, Hiromichi; and Arimitsu, Satoshi, 4,185,237, Cl. 324-317.000.

Saino, Tetsushi: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Saino, Tetsushi; and Koyama, Michinori, 4,185,156, Cl. 562-440.000.

Saito, Takemi: *See*—
Yamauchi, Toshiro; Saito, Takemi; and Kanayama, Shigehiro, 4,185,297, Cl. 358-55.000.

Sakai, Takao; Maki, Minoru; and Tamura, Hisashi. Globoid worm gear generating method. 4,184,796, Cl. 409-12.000.

Sakairi, Tadashi: *See*—
Watanabe, Sadao; Itoh, Mitsuru; Sakairi, Tadashi; Funakoshi, Yasutomo; and Hiya, Kohji, 4,185,262, Cl. 335-302.000.

Sakakibara, Sakuichi; Sugisawa, Ko; Kimura, Takashi; Yasukawa, Teruo; and Matsushima, Kikuo, to House Food Industrial Company Ltd. Method of frying raw noodles in a perforated container. 4,185,125, Cl. 426-439.000.

Sakakibara, Shigemi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Pilot lamp mechanism of a parking brake circuit. 4,185,268, Cl. 340-69.000.

Saleen, Merrill E. Inflatable suspenders. 4,184,216, Cl. 9-318.000.

Salenstedt, Karl R.: *See*—
Blixt, Kjell G.; Tornmarck, Sven I. A.; Juhlin, Rolf; Salenstedt, Karl R.; and Tiru, Mandayam, 4,184,920, Cl. 435-19.000.

Salzmann, Jean-Jacques: *See*—
Benguerel, Francois; and Salzmann, Jean-Jacques, 4,185,013, Cl. 260-152.000.

Samcoe Holding Corporation: *See*—
Diggle, Edmund A., Jr., 4,184,846, Cl. 8-149.100.

Samour, Carlos M.; and Vida, Julius A., to Westwood Pharmaceuticals Inc. Antiosteoporotic agents. 4,185,108, Cl. 424-274.000.

Sampo Lock Co., Ltd.: *See*—
Suzuki, Takao; and Miyamae, Yasuo, 4,185,179, Cl. 200-44.000.

Sanders Associates, Inc.: *See*—
Cote, Maurice; and Bauman, Ralph E., 4,185,258, Cl. 333-262.000.

Sando Iron Works Co., Ltd.: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,184,346, Cl. 68-5.00E.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Seal device for high pressure steamer. 4,184,346, Cl. 68-5.00E.

Sandoz, Inc.: *See*—
Kathawala, Faizulla G., 4,185,118, Cl. 424-324.000.

Sandoz Ltd.: *See*—
Benguerel, Francois; and Salzmann, Jean-Jacques, 4,185,013, Cl. 260-152.000.
Dorner, Friedrich; Scriba, Marianne; and Weil, Rudolf, 4,184,917, Cl. 435-68.000.
Leber, Jean-Pierre, 4,185,052, Cl. 260-972.000.

Sandvik Aktiebolag: *See*—
Levefelt, Bert G., 4,184,554, Cl. 175-317.000.

Sanuki, Setsuo: *See*—
Nakamura, Masayuki; and Sanuki, Setsuo, 4,185,002, Cl. 260-42.540.

Sapos S.A.: *See*—
Gold-Aubert, Philippe; and Melkonian, Diran, 4,185,104, Cl. 424-254.000.

Sapsed, Leslie F.: *See*—
Cowlin, Robert M.; Long, Peter G.; Sapsed, Leslie F.; and Steward, John F., 4,184,598, Cl. 209-705.000.

Sarantakis, Dimitrios, to American Home Products Corporation. Nonapeptides. 4,185,010, Cl. 260-112.50S.

Saruta, Masahiro: *See*—
Kimata, Kei; Yasuda, Yoshinobu; Yoshida, Isamu; and Saruta, Masahiro, 4,184,505, Cl. 137-117.000.

Sasamori, Yusuke, to Rank Xerox Limited. Automatic document handler in duplex copying machine. 4,184,671, Cl. 271-18.000.

Sasaya, Hideaki: *See*—
Inagaki, Mitsuo; Sasaya, Hideaki; and Kurahashi, Takashi, 4,184,804, Cl. 415-213.00R.

Sato, Hiroshi; Nakatani, Munetsugu; and Sugimori, Shuichi, to Mitsubishi Rayon Company Limited. Process for producing the polypropylene film for electrical appliances. 4,185,148, Cl. 526-348.100.

Sato, Masaaki, to Olympus Optical Co., Ltd. Tape cassette. 4,185,307, Cl. 360-94.000.

Sato, Mitsuo: *See*—
Itoh, Fumikazu; Sato, Mitsuo; Kamita, Nobu; Kobayashi, Takashi; and Sugimoto, Noboru, 4,184,644, Cl. 242-4.00B.

Satoh, Daisuke: *See*—
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, 4,185,016, Cl. 260-239.30T.

Saucy, Gabriel: *See*—
Olson, Gary L.; and Saucy, Gabriel, 4,185,154, Cl. 560-60.000.

Sauder, James W., to Chattanooga Pharmacal Company. Selective heating and cooling apparatus. 4,184,537, Cl. 165-46.000.

Saunders, Andrew A., Jr.: *See*—
Cornett, Jack E.; Corley, Ralph C.; Fraley, Thomas O.; and Saunders, Andrew A., Jr., 4,184,327, Cl. 60-240.000.

Scannell, Edward P., to Reynolds Metals Company. Gaseous electrode for MHD generator. 4,185,213, Cl. 310-11.000.

Schacht, Ulrich: *See*—
Schmitt, Karl; Hoffmann, Irmgard; and Schacht, Ulrich, 4,185,105, Cl. 424-258.000.

Schade, Maynard W. Flexible-wall fuel pump with means to dampen wall oscillations. 4,184,811, Cl. 417-394.000.

Schaeuble, Werner J.: *See*—
Hodges, Paul; Schaeuble, Werner J.; and Shaffer, Paul L., 4,185,269, Cl. 340-146.1AL.
Schaevitz Engineering: *See*—
Schmidt, Ernest D. D., 4,185,235, Cl. 318-677.000.
Schaible, Clifford W., to Bell Telephone Laboratories, Incorporated. Signal-to-noise ratio measurement of intermittent signals. 4,185,242, Cl. 325-363.000.
Schaper, Gustav; and Prahl nee Strassmeier, Gertraud, to Prahl, Traudl. Mamma prosthesis and mold for the manufacture thereof. 4,184,214, Cl. 3-36.000.
Schedele, Helmut, to Siemens Aktiengesellschaft. Housing assembly for an electromagnetic relay. 4,185,163, Cl. 174-52.00S.
Scheithauer, William, Jr.: *See*—
Ritsko, Joseph E.; Acla, Howard L.; Vanderpool, Clarence D.; Scheithauer, William, Jr.; and Harris, Geoffrey L., 4,184,868, Cl. 75-0.500.
Schepens, Antonius C. M.: *See*—
van de Plassche, Rudy J.; and Schepens, Antonius C. M., 4,185,236, Cl. 323-1.000.
Scherbinin, Eduard V.: *See*—
Butseniex, Imant E.; Levina, Margarita Y.; Prostyakov, Alexandr A.; Stolov, Mikhail Y.; Sharamkin, Vladimir I.; and Scherbinin, Eduard V., 4,185,159, Cl. 13-29.000.
Schering Corporation: *See*—
Draper, Richard W.; Green, Michael J.; and Casmer, Charles J., 4,185,101, Cl. 424-243.000.
Scheuermann, Fanny; Heidrich, Jochen; and Bischoff, Martin, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Stable, aqueous or aqueous-alcoholic solutions of fat-soluble perfume oils containing hydroxyalkyl ether-ethoxylates. 4,184,985, Cl. 252-522.000.
Scheurman, Clarence, III, to Zimmite Corporation. Corrosion inhibiting composition for ferrous metals and method of treating with same. 4,184,991, Cl. 260-29.6MN.
Schievelbein, Vernon H., to Texaco Inc. High conformance oil recovery process. 4,184,549, Cl. 166-269.000.
Schindler, Johannes G.; and Riemann, Werner, to Dr. E. Fresenius Chemisch Pharmazeutische Industrie. Reference electrode. 4,184,935, Cl. 204-195.00F.
Schippers, Heinz, to Barmag Barmer Maschinenfabrik AG. Process for high speed production of filament cables. 4,185,064, Cl. 264-210.200.
Schlick, Horst; and Rau, Karl. Liquid level measuring device. 4,184,370, Cl. 73-313.000.
Schlotthauer, Harley L.: *See*—
Lange, Robert G.; and Schlotthauer, Harley L., 4,184,887, Cl. 106-111.000.
Schlumberger Technology Corporation: *See*—
Huchital, Gerald S.; and Tabanou, Jacques-Rene, 4,185,238, Cl. 324-338.000.
Nicolas, Yves; and Tromelin, Jacques, 4,184,546, Cl. 166-206.000.
Schroeder, Gene F., 4,185,246, Cl. 328-165.000.
Schmeling, William H., to Square D Company. Segmented fanning strip. 4,184,733, Cl. 339-198.00H.
Schmidbaur, Hubert; and Fuller, Hans-Jurgen, to Hoechst Aktiengesellschaft. Double ylide complexes of metals and process for making them. 4,185,028, Cl. 260-430.000.
Schmidt, Ernest D. D., to Schaevitz Engineering. Servo amplifier providing current torque and dynamic parameters. 4,185,235, Cl. 318-677.000.
Schmidt, Willi J.; and Roth, Norbert, to Hoechst Aktiengesellschaft. Process for preparing a web of film prior to winding it into a wound roll. 4,185,068, Cl. 264-284.000.
Schmitt, Karl; Hoffmann, Irmgard; and Schacht, Ulrich, to Hoechst Aktiengesellschaft. 4-Phenyl-8-amino-tetrahydroisoquinolines and antidepressant use. 4,185,105, Cl. 424-258.000.
Schmolz, Hubert: *See*—
Polzer, Erich; and Schmolz, Hubert, 4,184,330, Cl. 60-335.000.
Schneider, Alan A.: *See*—
Tataria, Harshad; Schneider, Alan A.; Travers, William A., Jr.; and Martin, Lee E., 4,184,937, Cl. 204-195.00R.
Schneider, Hartmut; and Lebetzki, Egon, to Siemens Aktiengesellschaft. Process for the production of glass fiber light conductors. 4,184,860, Cl. 65-3.00A.
Schotten, Alfons, to Eberhard Hoesch & Sohne GmbH & Co. Filter press with transporting and locking device. 4,184,960, Cl. 210-230.000.
Schroder, Klaus. Elimination of noise in the operation of a stress controlled memory. 4,185,322, Cl. 365-209.000.
Schroeder, Gene F., to Schlumberger Technology Corporation. Circuit for reducing transients by precharging capacitors. 4,185,246, Cl. 328-165.000.
Schroeder, Joseph W.; and Krawchuk, Myron T., to Foster Wheeler Energy Corporation. Method for removing tubes from a tubesheet. 4,184,243, Cl. 29-427.000.
Schroeder, Wolfgang; and Franzischka, Wolfgang, to BASF Aktiengesellschaft. Preparation of a silicate hydrogenation catalyst. 4,184,982, Cl. 252-452.000.
Schubert, Richard M., to Eastman Kodak Company. Reduction of gentisic acid interference in analytical elements. 4,184,923, Cl. 435-10.000.
Schubert & Salzer: *See*—
Braun, Erwin; and Bock, Erich, 4,184,315, Cl. 57-89.000.
Schultz, Frank L. Mailing assembly. 4,184,628, Cl. 229-68.00R.
Schulz, Rudi. Device for folding a strip of material. 4,184,439, Cl. 112-147.000.
Schutten, Herman P.: *See*—
Lade, Robert W.; Jaskolski, Stanley V.; Spellman, Gordon B.; and Schutten, Herman P., 4,185,253, Cl. 331-66.000.
Schwabauer, Nile L., to Gates Rubber Company, The. Apparatus for making power transmission belting. 4,184,822, Cl. 425-28.00B.
Schwartz, Kenneth P.: *See*—
Smolinski, Ronald E.; and Schwartz, Kenneth P., 4,184,821, Cl. 418-93.000.
Schwering, Felix: *See*—
DeSantis, Charles M.; and Schwering, Felix, 4,185,289, Cl. 343-770.000.
Schwuger, Milan J.: *See*—
Krings, Peter; Huppertz, Josef; Reuter, Herbert; Kuhling, Dieter; Schwuger, Milan J.; and Smolka, Heinz, 4,184,975, Cl. 252-140.000.
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., to Xerox Corporation. Mode control of heterojunction injection lasers and method of fabrication. 4,185,256, Cl. 331-94.50H.
Scott USA, Inc.: *See*—
Boyer, Scott M.; Dawson, Chris R.; French, Charles S.; Morgan, Clyde R.; and Grabos, Fred F., Jr., 4,184,273, Cl. 36-131.000.
Scriba, Marianne: *See*—
Dorner, Friedrich; Scriba, Marianne; and Weil, Rudolf, 4,184,917, Cl. 435-68.000.
Seanor, Donald A.: *See*—
Strella, Stephen; Seanor, Donald A.; Imperial, George R.; and Hoffend, Thomas R., 4,185,140, Cl. 428-418.000.
Sebardt, Carl; and Orrling, Bengt, to Stiftelsen For Metallurgisk Forskning. Rolling mill. 4,184,353, Cl. 72-221.000.
Seidler, David, to Revlon, Inc. Devices with two working surfaces. 4,184,499, Cl. 132-75.600.
Seiko Koki Kabushiki Kaisha: *See*—
Nakagawa, Tadashi; and Nemoto, Ichiro, 4,184,761, Cl. 354-267.000.
Seiko Seiki Kabushiki Kaisha: *See*—
Tatsumi, Youji; and Hachisu, Masuo, 4,184,263, Cl. 33-178.00E.
Sekiguchi, Keisuke: *See*—
Omura, Yoshimoto; Hara, Hideo; Kawashima, Isao; Sekiguchi, Keisuke; and Shino, Kuninori, 4,184,688, Cl. 274-15.00R.
Sekiguchi, Shizuo: *See*—
Yamamoto, Kazuo; Sekiguchi, Shizuo; and Miyawaki, Yozo, 4,185,034, Cl. 260-513.00R.
Senchakov, Anatoly I.: *See*—
Otopkov, Petr P.; Nozhkina, Alla V.; Kostikov, Valery I.; Andropov, Jury I.; Senchakov, Anatoly I.; Pesina, Anna Y.; and Kabanov, Alexandr V., 4,184,853, Cl. 51-295.000.
Seney, John S., to Du Pont de Nemours, E. I., and Company. Yarn winding apparatus. 4,184,646, Cl. 242-45.000.
Sepulveda, Domingo: *See*—
Pane, Francis C., Jr.; and Sepulveda, Domingo, 4,184,326, Cl. 60-39.320.
Seredenko, Vladimir P.: *See*—
Mushenko, Nikolai Y.; Larin, Gennady P.; Seredenko, Vladimir P.; and Svetikov, Ivan P., 4,184,637, Cl. 239-419.300.
Settembre, Richard J. Safety binding for touring skis. 4,184,696, Cl. 280-615.000.
Seuter, Antonius M. J. H.: *See*—
van den Boom, Petrus F. J.; and Seuter, Antonius M. J. H., 4,185,222, Cl. 313-486.000.
Sfredda, Albert. Infinitely variable speed transmission. 4,184,388, Cl. 74-793.000.
Shaffer, Paul L.: *See*—
Hodges, Paul; Schaeuble, Werner J.; and Shaffer, Paul L., 4,185,269, Cl. 340-146.1AL.
Shaffer, Robert C., to Hitco. Polymers containing chemically bonded metal atoms. 4,185,043, Cl. 525-364.000.
Shampanier, Abraham. Mixing and dispensing of dental and like materials. 4,184,776, Cl. 366-198.000.
Sharamkin, Vladimir I.: *See*—
Butseniex, Imant E.; Levina, Margarita Y.; Prostyakov, Alexandr A.; Stolov, Mikhail Y.; Sharamkin, Vladimir I.; and Scherbinin, Eduard V., 4,185,159, Cl. 13-29.000.
Sharp, Anthony J. Method of forming a package for products and the resulting pack. 4,184,308, Cl. 53-413.000.
Sharp Corporation: *See*—
Nakashima, Noriyuki, 4,185,266, Cl. 340-52.00F.
Sharp Kabushiki Kaisha: *See*—
Kumata, Kiyoshi, 4,184,319, Cl. 58-50.00R.
Morino, Masuaki; and Hashimoto, Shintaro, 4,185,170, Cl. 179-1.0SM.
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,185,169, Cl. 179-1.0SM.
Shaw, Glen A., to Harshaw Chemical Company, The. Hair grooming aid containing fibrillatable polytetrafluoroethylene resin. 4,184,973, Cl. 252-174.230.
Shelby, Richard K. Sealed container and method of making the same. 4,184,310, Cl. 53-412.000.
Shell Oil Company: *See*—
Pilgram, Kurt H. G.; and Skiles, Richard D., 4,184,867, Cl. 71-98.000.
Stewart, Thomas L., 4,184,952, Cl. 210-78.000.
Verkouw, Hendrik T., 4,185,042, Cl. 525-332.000.
Shepherd, Robert G.: *See*—
Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., 4,185,115, Cl. 424-310.000.

Sherif, Fawzy G.; and Smith, W. Novis, to Stauffer Chemical Company. Sulfuric acid catalyst and process therefor. 4,184,980, Cl. 252-436.000.

Shevchenko, Richard. Industrial pallets and method of manufacturing. 4,184,435, Cl. 108-57.100.

Shibata, Shinya: *See*—
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,185,169, Cl. 179-1.0SM.

Shichijo, Hajime; and Hosono, Hiroshi, to Sony Corporation. Remote control apparatus for presetting a tuning device to desired stations. 4,184,446, Cl. 116-262.000.

Shichijo, Hajime; Tsukatani, Masamitsu; and Kaji, Toshihiko, to Sony Corporation. Tuning apparatus. 4,184,447, Cl. 116-262.000.

Shield, C. Nelson, Jr., Trustee: *See*—
Bassett, Max, 4,184,790, Cl. 405-225.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Noshiro, Atsumi; Takamizawa, Minoru; and Inoue, Yoshio, 4,184,873, Cl. 430-258.000.

Shinkai, Hiroyuki: *See*—
Mochida, Ei; Ogawa, Nobuhisa; Shinkai, Hiroyuki; and Hashimoto, Masakatsu, 4,185,084, Cl. 424-1.000.

Shino, Kuninori: *See*—
Omura, Yoshimoto; Hara, Hideo; Kawashima, Isao; Sekiguchi, Keisuke; and Shino, Kuninori, 4,184,688, Cl. 274-15.00R.

Shiokawa, Hideaki: *See*—
Kikuchi, Hiroyuki; Kawaguchi, Nobuo; and Shiokawa, Hideaki, 4,185,119, Cl. 424-258.000.

Shippy, Ronald L.; and Ahmad, Shamim, to B. F. Goodrich Company, The. Non odorous silane coupling agent. 4,184,998, Cl. 260-42.150.

Shirato, Takeshi: *See*—
Abe, Setsuo; Asakura, Tomomi; Shirato, Takeshi; and Miyake, Motomasa, 4,184,323, Cl. 60-39.030.

Siegelman, Abe. Self generating electrical pickup for musical instruments. 4,184,398, Cl. 84-1.150.

Siemens Aktiengesellschaft: *See*—
Huebner, Wolfgang, 4,184,730, Cl. 339-17.0LC.
Schedele, Helmut, 4,185,163, Cl. 174-52.00S.
Schneider, Hartmut; and Lebetzki, Egon, 4,184,860, Cl. 65-3.00A.
Tihanyi, Jenoe, 4,185,293, Cl. 357-32.000.

Sierra Research Corporation: *See*—
Dosch, Thomas J.; McCoy, Rawley; and Steele, Theodore W., 4,185,288, Cl. 343-765.000.

Sigl, Edward D., to Bowmar Instrument Corporation. Internal pinion revolution counter and method of assembling the same. 4,185,188, Cl. 235-139.00A.

Silverstone, Derek M., to Elliott Brothers (London) Limited. Arrangement for selecting a desired data display. 4,185,281, Cl. 340-706.000.

Simm, Wolfgang: *See*—
Wasserman, Rene; and Simm, Wolfgang, 4,185,136, Cl. 428-368.000.

Simmons, Roy Z., to Harrington Manufacturing Company. Bulk tobacco container and air diffuser therefor. 4,184,706, Cl. 294-5.500.

Sims, Ernest J., Jr.: *See*—
Cutler, Jerome J., 4,184,345, Cl. 64-28.00R.

Sims, Louis R.: *See*—
Smith, Gary W.; Leavens, Dwight E.; and Sims, Louis R., 4,185,026, Cl. 260-412.500.

Singer Company, The: *See*—
Brown, Jack; Coughenour, Donald J.; and Pepe, Russell J., 4,184,441, Cl. 112-158.00E.
Brown, Jack; Herr, John A.; Jaffe, Wolfgang; and Peterson, Wesley R., 4,184,443, Cl. 112-225.000.
Comerford, John; and Lauritsen, Richard L., 4,184,381, Cl. 74-471.0XY.
Matsumoto, Setsuo, 4,184,440, Cl. 112-158.00A.

Singh, Udai P.; and Lutz, John T., Jr., to Rohm and Haas Company. Plasticizer, plasticized resin composition and process for preparation thereof. 4,184,993, Cl. 260-31.20R.

Sinha, Rabindra K., to Calgon Corporation. Catalytic carbon for oxidation of carbon monoxide in the presence of sulfur dioxide. 4,185,082, Cl. 423-437.000.

Sioui, Richard H.; and Carver, Edgar B., to Norton Company. Magnetic cores for diamond or cubic boron nitride grinding wheels. 4,184,854, Cl. 51-298.000.

Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, to American Cyanamid Company. Ureylene phenylene anionic naphthalenesulfonic acids. 4,185,032, Cl. 260-506.000.

Siuta, Gerald J.; Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, to American Cyanamid Company. Ureylene phenylene anionic naphthalenesulfonic acids. 4,185,033, Cl. 260-506.000.

Sjogren, Karl-Erik, to American Air Filter Company, Inc. Apparatus for collecting and removing smoke and fumes from a melting furnace plant. 4,185,157, Cl. 13-1.000.

Skahill, Richard J., to J. I. Case Company. Enclosure mechanism for roll over protective structure. 4,184,712, Cl. 296-190.000.

Skiles, Richard D.: *See*—
Pilgram, Kurt H. G.; and Skiles, Richard D., 4,184,867, Cl. 71-98.000.

Skryantz, John S.: *See*—
Karayannis, Nicholas M.; Khelghatian, Habet M.; and Skryantz, John S., 4,184,987, Cl. 260-23.00H.

Sleezer, Paul D.; and Johnson, David A., to Bristol-Myers Company. Methoxymethyl 6-[D-2,2-dimethyl-4-(4-hydroxyphenyl)-5-oxo-1-imidazolyl]penicillanate. 4,185,015, Cl. 260-239.100.

Sloan, Walter J.: *See*—
Halvorson, David O.; and Sloan, Walter J., 4,184,893, Cl. 134-25.00R.

Smernos, Stauros, to International Standard Electric Corporation. Filler for a glass-ceramic material comprising CaF_2 granules overcoated with a silicon dioxide film. 4,185,139, Cl. 428-404.000.

Smith, Donald L.; and Clark, Michael N., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Shear pin release system. 4,184,408, Cl. 89-1.806.

Smith, Gary W.; Leavens, Dwight E.; and Sims, Louis R., to Sylvachem Corporation. Process for cleansing spent clay from the refining of glyceride esters. 4,185,026, Cl. 260-412.500.

Smith, George L.; and Smith, Leslie J. Production of plastics articles. 4,185,069, Cl. 264-322.000.

Smith, Gregory C.; Tokarz, Richard D.; Parry, Harvey L., Jr.; and Braun, Daniel J., to United States of America, Energy. Heat rejection system. 4,184,536, Cl. 165-1.000.

Smith Kline & French Laboratories Limited: *See*—
Brown, Thomas H.; and Ife, Robert J., 4,185,103, Cl. 424-249.000.

Smith, Leslie J.: *See*—
Smith, George L.; and Smith, Leslie J., 4,185,069, Cl. 264-322.000.

Smith, Raymond E.: *See*—
Burns, Kenneth L.; Smith, Raymond E.; and Doughdrill, Don J., 4,184,838, Cl. 431-202.000.

Smith, Robert A., to Abbott Laboratories. Topical treatment of fungal or yeast infections using p-tolyl diiodomethyl sulfone. 4,185,120, Cl. 424-337.000.

Smith, W. Novis: *See*—
Sherif, Fawzy G.; and Smith, W. Novis, 4,184,980, Cl. 252-436.000.

Smiths Industries Limited: *See*—
Baker, Peter D.; and Luke, Douglas V., 4,184,743, Cl. 350-96.230.

Smolinski, Ronald E.; and Schwartz, Kenneth P. High velocity rotary vane cooling system. 4,184,821, Cl. 418-93.000.

Smolka, Heinz: *See*—
Krings, Peter; Huppertz, Josef; Reuter, Herbert; Kuhling, Dieter; Schwuger, Milan J.; and Smolka, Heinz, 4,184,975, Cl. 252-140.000.

Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa s.p.a.: *See*—
Luzzatto, Ettore, 4,185,062, Cl. 264-176.00F.

Snow Brand Milk Products Co., Ltd.: *See*—
Iwasaki, Taisuke; and Kikuchi, Toshihiko, 4,184,919, Cl. 435-175.000.

So "Voden Transport": *See*—
Vassilev, Grigor D.; Yordanov, Zdravko A.; Stoyanov, Lyubomir A.; Ralev, Rali V.; and Kostov, Kosta M., 4,184,363, Cl. 73-61.10R.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Huster, Lienhard B.; and Guggenbuhler, Max, 4,185,121, Cl. 426-250.000.

Societe de Paris et du Rhone: *See*—
Mazzorana, Alfred B., 4,184,378, Cl. 74-7.00A.

Societe Generale de Mecanique et de Metallurgie: *See*—
Blatrix, Jean-Pierre, 4,184,793, Cl. 406-61.000.

Societe Industrielle Bertrand Faure: *See*—
Courtois, Bernard, 4,184,714, Cl. 297-370.000.

Societe Industrielle et Forestiere des Allumettes: *See*—
Coggiola, Marcel, 4,184,641, Cl. 241-37.500.

Societe Nationale des Poudres et Explosifs: *See*—
Pollozec, Francois A.; and Nouaillant, Michel, 4,184,891, Cl. 134-10.000.

Societe Nationale Industrielle Aerospatiale: *See*—
Poubeau, Pierre, 4,184,572, Cl. 188-74.000.

Sodeco-Saia AG: *See*—
Gerber, Hermann; and Plotscher, Hans, 4,185,214, Cl. 310-51.000.

Soderberg, Mark S.: *See*—
Benson, Richard L.; Hill, Horace E.; and Soderberg, Mark S., 4,184,692, Cl. 279-75.000.

Sofisti-Caire Furniture Mfg. Inc.: *See*—
Blankenship, James O., 4,184,237, Cl. 29-91.100.

Sokolov, Alexandr I.: *See*—
Gorlitsin, Sergei N.; Koires, Vladimir I.; and Sokolov, Alexandr I., 4,184,358, Cl. 72-462.000.

Solar Products Limited: *See*—
Fuller, Dean L., 4,184,478, Cl. 126-434.000.

Solarex Corporation: *See*—
Lindmayer, Joseph; and Wrigley, Charles Y., 4,184,894, Cl. 136-89.0MS.

Solomon, Frank; Lieb, Donald F.; and LaBarre, Ronald L., to Diamond Shamrock Corporation. Oxygen electrode rejuvenation methods. 4,185,142, Cl. 429-49.000.

Sony Corporation: *See*—
Omura, Yoshimoto; Hara, Hideo; Kawashima, Isao; Sekiguchi, Keisuke; and Shino, Kuninori, 4,184,688, Cl. 274-15.00R.
Shichijo, Hajime; and Hosono, Hiroshi, 4,184,446, Cl. 116-262.000.
Shichijo, Hajime; Tsukatani, Masamitsu; and Kaji, Toshihiko, 4,184,447, Cl. 116-262.000.

Soran, Robert L., to Beatrice Foods Co. Device for processing poultry backs. 4,184,229, Cl. 17-11.000.

Sorbini, Paolo, to Also Laboratori S.a.S. di Dr.P. Sorbini & C. Hair and scalp treatment with compositions containing chenodeoxycholic or ursodeoxycholic acid. 4,185,099, Cl. 424-238.000.

Sorg GmbH & Co. KG: *See*—
Pieper, Helmut, 4,184,863, Cl. 65-135.000.

Sosnay, Alan J. Orthodontic tool for placing twists in arch wires. 4,184,259, Cl. 433-4.000.

Span Instruments, Inc.: *See—*
Gray, Tommy L., 4,184,375, Cl. 73-706.000.
Spangler, James L. Book-holding apparatus for kitchen type cabinet. 4,184,725, Cl. 312-233.000.
Spaulding, Tedford H., to Bunker Ramo Corporation. Two-piece contact assembly for electrical connector assemblies. 4,184,736, Cl. 339-258.00R.
Spehrley, Charles W., Jr., to Xerox Corporation. Stapler head. 4,184,622, Cl. 227-119.000.
Spellman, Gordon B.: *See—*
Lade, Robert W.; Jaskolski, Stanley V.; Spellman, Gordon B.; and Schutten, Herman P., 4,185,253, Cl. 331-66.000.
Spengler, Duane; and Darling, David S., to Quaker Oats Company, The. Damage-free actuating mechanism for an action toy. 4,184,286, Cl. 46-205.000.
Spiess, Hans P.: *See—*
Gunther, Alphons; Pomorin, Karl-Heinz; Spiess, Hans P.; and Ullrich, Georg J., 4,184,241, Cl. 29-278.000.
Spiker, Van P.: *See—*
Bata, George T.; Spiker, Van P.; and Harper, Patrick D., 4,184,633, Cl. 236-68.00R.
Betts, Jeri A.; and Spiker, Van P., 4,184,634, Cl. 236-13.000.
Spivack, John D.: *See—*
Rasberger, Michael; and Spivack, John D., 4,185,006, Cl. 260-45.80N.
Spors, Rodney D., to Beatrice Foods Co. Process of reconstituting cheese trimmings into horns. 4,185,126, Cl. 426-512.000.
Springer, Hartmut: *See—*
Meininger, Fritz; and Springer, Hartmut, 4,185,012, Cl. 260-148.000.
Spurrier, Leslie P.: *See—*
Dimmock, Eric P.; and Spurrier, Leslie P., 4,184,586, Cl. 198-726.000.
Square D Company: *See—*
Schmeling, William H., 4,184,733, Cl. 339-198.00H.
Squire, Gerald K.: *See—*
Griffin, Noel J.; Miller, Larry D.; Squire, Gerald K.; and Knochelmann, Carl E., Jr., 4,185,265, Cl. 340-32.000.
Stabentheiner, Gabriel: *See—*
Rapp, Karl; Brett, Hans; Tyrolt, Alex; and Stabentheiner, Gabriel, 4,184,816, Cl. 417-499.000.
Stackman, Robert W.: *See—*
Lazear, Nelson R.; and Stackman, Robert W., 4,185,050, Cl. 525-221.000.
Staff, Bonner W.: *See—*
Evans, Charles B.; Fenton, John D.; and Staff, Bonner W., 4,184,373, Cl. 73-588.000.
Staheli, Paul: *See—*
Binder, Rolf; and Staheli, Paul, 4,184,611, Cl. 222-1.000.
Stanadyne, Inc.: *See—*
Svihlik, Frank C., 4,184,464, Cl. 123-90.550.
Standard Oil Company (Indiana): *See—*
Bakamjian, Barkev Y., 4,184,562, Cl. 181-104.000.
Caspari, Gunter; and Poppe, Wassily, 4,185,008, Cl. 260-45.80A.
Ginsburgh, Irwin; and Papadopoulos, Christos G., 4,184,548, Cl. 166-251.000.
Karayannis, Nicholas M.; Khelghatian, Habet M.; and Skryantz, John S., 4,184,987, Cl. 260-23.00H.
Marsh, David R.; and Stark, Leonard E., 4,185,073, Cl. 422-111.000.
Standard Products Company, The: *See—*
Purvis, Thomas A., 4,184,294, Cl. 52-2.000.
Standley, Wendell E.; and Naureckas, Edward M., to Abbott Laboratories. Bottle leak tester. 4,184,362, Cl. 73-40.700.
Stark, Friedrich: *See—*
Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Stephan, Herbert; and Stark, Friedrich, 4,184,448, Cl. 118-729.000.
Stark, Leonard E.: *See—*
Marsh, David R.; and Stark, Leonard E., 4,185,073, Cl. 422-111.000.
Stark, Wolfgang: *See—*
Jung, Wilhelm; and Stark, Wolfgang, 4,184,369, Cl. 73-304.00C.
Starling, David M. Fly tying apparatus. 4,184,645, Cl. 242-7.010.
Staub, Donald F.: *See—*
Kantarian, Edward T.; and Staub, Donald F., 4,184,579, Cl. 193-35.00A.
Stauffer Chemical Company: *See—*
Mirviss, Stanley B.; and Von Lehman, Thomas M., 4,185,053, Cl. 260-986.000.
Sherif, Fawzy G.; and Smith, W. Novis, 4,184,980, Cl. 252-436.000.
Stauffer, Norman L., to Honeywell Inc. Auto focus system. 4,184,968, Cl. 250-201.000.
Stauffer, Norman L., to Honeywell Inc. Range determination system. 4,185,191, Cl. 250-204.000.
Steele, Theodore W.: *See—*
Dosch, Thomas J.; McCoy, Rawley; and Steele, Theodore W., 4,185,288, Cl. 343-765.000.
Stein Industrie S.A.: *See—*
Marjollet, Jacques; and Marsault, Jean-Jacques, 4,184,785, Cl. 403-337.000.
Stephan, Herbert: *See—*
Aichert, Hans; Dietrich, Walter; Hauff, Alfred; Stephan, Herbert; and Stark, Friedrich, 4,184,448, Cl. 118-729.000.
Stephens, Stanley W.: *See—*
Grenfell, Julian P.; and Stephens, Stanley W., 4,184,728, Cl. 316-31.000.
Sternberg, Shmuel, to Millipore Corporation. Immersible molecular filter unit and process of making it. 4,184,963, Cl. 210-321.00R.
Steutermann, Edward M.: *See—*
Oesterritter, Richard B.; and Steutermann, Edward M., 4,184,516, Cl. 138-96.00R.
Stevels, Albert L. N., to U.S. Philips Corporation. X-ray detector. 4,185,201, Cl. 250-483.000.
Steward, John F.: *See—*
Cowlin, Robert M.; Long, Peter G.; Sapsed, Leslie F.; and Steward, John F., 4,184,598, Cl. 209-705.000.
Stewart, David B.; and Preston, Edward G., to Wm. R. Stewart & Sons (Hacklemakers) Limited. Cutting device. 4,184,619, Cl. 225-94.000.
Stewart, Herbert M.; and Tanner, William J., to Aladdin Industries, Incorporated. Microwave safe vacuum insulated containers and method of manufacture. 4,184,601, Cl. 215-13.00R.
Stewart, Roger G., to RCA Corporation. Non-volatile memory device. 4,185,319, Cl. 365-185.000.
Stewart, Thomas L., to Shell Oil Company. Measurement of BSW in crude oil streams. 4,184,952, Cl. 210-78.000.
Stichting Voor Fundamenteel Onderzoek der Materie: *See—*
Witteman, Wilhelmus J.; and Reits, Bernard J., 4,185,255, Cl. 331-94.5PE.
Stiftelsen For Metallurgisk Forskning: *See—*
Sebardt, Carl; and Orrling, Bengt, 4,184,353, Cl. 72-221.000.
Stoev, Stoycho M.; Mitrushev, Marin D.; Boshilov, Grozdan T.; and Radeva, Maria G., to Vish Minno-Geoloshki Institute-Nis. Vibro-acoustical extraction apparatus. 4,184,965, Cl. 210-388.000.
Stollberg, Ray H.; Johnson, Wendell J.; and Welch, Richard O., to Crown Zellerbach Corporation. Container for fresh products such as asparagus. 4,184,625, Cl. 229-23.0BT.
Stolov, Mikhail Y.: *See—*
Butseniex, Imant E.; Levina, Margarita Y.; Prostyakov, Alexandr A.; Stolov, Mikhail Y.; Sharamkin, Vladimir I.; and Scherbinin, Eduard V., 4,185,159, Cl. 13-29.000.
Storey, Christopher C.: *See—*
Watkins, Harry J.; and Storey, Christopher C., 4,184,672, Cl. 271-105.000.
Stoyanov, Lyubomir A.: *See—*
Vassilev, Grigor D.; Yordanov, Zdravko A.; Stoyanov, Lyubomir A.; Ralev, Rali V.; and Kostov, Kosta M., 4,184,363, Cl. 73-61.10R.
Strasser, Burkhard. Process for bonding circuit modules onto a thin-film circuit. 4,184,623, Cl. 228-180.00A.
Strauss, Edgar H.: *See—*
Langen, Marinus J. M.; and Strauss, Edgar H., 4,184,413, Cl. 93-19.000.
Street, Dana C., to Rockwell International Corporation. CMOS boolean logic circuit. 4,185,209, Cl. 307-218.000.
Streich, Steven G.; Knox, Lloyd C.; and Sullaway, Bob L., to Halliburton Company. Retrievable plug for offshore platforms having shear type retaining means. 4,184,515, Cl. 138-89.000.
Streifer, William: *See—*
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,185,256, Cl. 331-94.50H.
Strella, Stephen; Seanor, Donald A.; Imperial, George R.; and Hoffend, Thomas R., to Xerox Corporation. Polymeric release agents for electroscopic thermoplastic toners. 4,185,140, Cl. 428-418.000.
Stubbings, James H., to Potomac Applied Mechanics, Inc. Fastening with two-piece fasteners. 4,184,357, Cl. 72-391.000.
Styrkin, German D.: *See—*
Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.
Sugawa, Toshio: *See—*
Hirao, Takashi; Takayanagi, Shigetoshi; Onuma, Takeshi; Sugawa, Toshio; and Inoue, Kaoru, 4,185,291, Cl. 357-22.000.
Sugimori, Shuichi: *See—*
Sato, Hiroshi; Nakatani, Munetsugu; and Sugimori, Shuichi, 4,185,148, Cl. 526-348.100.
Sugimoto, Noboru: *See—*
Itoh, Fumikazu; Sato, Mitsuo; Kamita, Nobu; Kobayashi, Takashi; and Sugimoto, Noboru, 4,184,644, Cl. 242-4.00B.
Sugisawa, Ko: *See—*
Sakakibara, Sakuichi; Sugisawa, Ko; Kimura, Takashi; Yasukawa, Teruo; and Matsushima, Kikuo, 4,185,125, Cl. 426-439.000.
Sujdak, Richard J., to Betz Laboratories, Inc. Ethylene polyamines as cold-end additives. 4,185,071, Cl. 422-9.000.
Sulewsky, James E.: *See—*
Cunningham, Donald R.; and Sulewsky, James E., 4,185,167, Cl. 179-1.0AA.
Sullaway, Bob L.: *See—*
Streich, Steven G.; Knox, Lloyd C.; and Sullaway, Bob L., 4,184,515, Cl. 138-89.000.
Sullivan, Philip L.: *See—*
Brown, William C., Jr.; Crete, Paul G.; Sullivan, Philip L.; and Williamson, James, 4,185,251, Cl. 330-279.000.
Sulzer Brothers Limited: *See—*
Mandrin, Charles, 4,184,325, Cl. 60-39.18R.
Sumi, Masao: *See—*
Onoda, Seiichi; Tanaka, Toshiki P.; and Sumi, Masao, 4,184,744, Cl. 350-96.330.
Sumitomo Durez Company, Ltd.: *See—*
Nakamura, Masayuki; and Sanuki, Setsuo, 4,185,002, Cl. 260-42.540.

Sumitomo, Hiroyuki, to Hisaka Works, Ltd. Plate type condenser. 4,184,542, Cl. 165-166.000.
Sumitomo Metal Mining Co.: *See—*
Ono, Masaharu; Kurokawa, Hirofumi; Yoshida, Kimio; Itado, Tadashi; and Uchihara, Yasuhiro, 4,184,235, Cl. 29-33.00R.
Sumitomo, Yasusuke; and Ohashi, Yoshie, to Tokyo Shibaura Electric Co., Ltd. Semiconductor device and a method for manufacturing the same. 4,185,294, Cl. 357-54.000.
Sun Chemical Corporation: *See—*
Horwitt, Laurence G., 4,184,350, Cl. 72-132.000.
Horwitt, Laurence G., 4,184,351, Cl. 72-132.000.
Suzuki, Ichiro; Kitamura, Kazuo; Wakimoto, Nobuo; and Watanabe, Hiroyuki, to Toyota Jidosha Kogyo Kabushiki-Kaisha. Front wheel supporting device for a motor vehicle. 4,184,697, Cl. 280-660.000.
Suzuki, Seigo: *See—*
Iwahashi, Hiroshi; and Suzuki, Seigo, 4,185,321, Cl. 365-204.000.
Suzuki, Taizan: *See—*
Iijima, Takashi; Suzuki, Taizan; Murayama, Yusuke; Nakamura, Eitaro; and Ueno, Shinji, 4,184,857, Cl. 55-54.000.
Suzuki, Takao; and Miyamae, Yasuo, to Japan Aviation Electronics Industry, Ltd.; and Sampo Lock Co., Ltd. Key-switch device. 4,185,179, Cl. 200-44.000.
Suzuki, Yoshiro, to Olympus Optical Co., Limited. Method of obtaining a number of copies transferred from one electrostatic latent image. 4,184,870, Cl. 430-53.000.
Svetikov, Ivan P.: *See—*
Mushenko, Nikolai Y.; Larin, Gennady P.; Seredenko, Vladimir P.; and Svetikov, Ivan P., 4,184,637, Cl. 239-419.300.
Svihlik, Frank C., to Stanadyne, Inc. Recirculation groove for hydraulic lash adjuster. 4,184,464, Cl. 123-90.550.
Swasey, Archie N.; and Grenier, George P., to USM Corporation. Continuous sheeter. 4,184,824, Cl. 425-75.000.
Swiss Aluminium Ltd.: *See—*
Gurewitsch, Anatole M.; and Weidemann, Robert W., 4,184,302, Cl. 52-582.000.
Sylvachem Corporation: *See—*
Smith, Gary W.; Leavens, Dwight E.; and Sims, Louis R., 4,185,026, Cl. 260-412.500.
Tabanou, Jacques-Rene: *See—*
Huchital, Gerald S.; and Tabanou, Jacques-Rene, 4,185,238, Cl. 324-338.000.
Tabernacle of God, Inc., The: *See—*
Podaras, William N.; and Berta, Joseph M., 4,184,420, Cl. 99-427.000.
Tacke, Peter; Neuray, Dieter; and Michael, Dietrich, to Bayer Aktiengesellschaft. Flame-proofed unreinforced and unfilled polyamide moulding compositions. 4,185,044, Cl. 525-1.000.
Takahashi, Koji: *See—*
Tanaka, Yoichi; Tsuruta, Masamichi; Takahashi, Koji; Hasegawa, Tsutomu; and Hori, Makoto, 4,184,971, Cl. 252-62.900.
Takahashi, Satomi: *See—*
Ohashi, Takehisa; Takahashi, Satomi; and Yoneda, Koji, 4,185,153, Cl. 548-309.000.
Takahashi, Toshiro; and Ikegaya, Masashi, to Riken Keikinzoku Kogyo Kabushiki Kaisha. Process and apparatus for effecting surface treatment of workpieces. 4,184,927, Cl. 204-33.000.
Takamizawa, Minoru: *See—*
Noshiro, Atsumi; Takamizawa, Minoru; and Inoue, Yoshio, 4,184,873, Cl. 430-258.000.
Takanabe, Atuyuki; Arakawa, Yoshio; Kagitani, Yoshio; Ueda, Yasuo; Satoh, Daisuke; and Komatsu, Nobuhiko, to Green Cross Corporation, The. Pyrrolo benzodiazepine compounds. 4,185,016, Cl. 260-239.30T.
Takasugi, Motofumi: *See—*
Koga, Noritaka; Yoshino, Nobuo; Yoshida, Touichi; and Takasugi, Motofumi, 4,184,463, Cl. 123-75.00R.
Takayanagi, Shigetoshi: *See—*
Hirao, Takashi; Takayanagi, Shigetoshi; Onuma, Takeshi; Sugawa, Toshio; and Inoue, Kaoru, 4,185,291, Cl. 357-22.000.
Takeda, Keiji, to Fuji Photo Film Co., Ltd. Photosensitive composition containing chelate compound. 4,184,874, Cl. 430-336.000.
Takeda, Masao: *See—*
Namura, Hisaki; Ohta, Koichi; Takeda, Masao; and Minematsu, Kiyoshi, 4,185,248, Cl. 330-2.000.
Takeda, Minoru: *See—*
Mitsuda, Katsumi; Yamamoto, Katsuhiko; Adachi, Katsumi; Tsujihara, Susumu; Saeki, Taiichi; and Takeda, Minoru, 4,185,301, Cl. 358-242.000.
Takemae, Yoshihiro; and Nakano, Masao, to Fujitsu Limited. Decoder circuit. 4,185,320, Cl. 365-203.000.
Takeuchi, Tohru, to Nissan Motor Company, Limited. Closed loop rotational speed control system for twin-shaft type gas turbine electric generator. 4,185,203, Cl. 290-40.00C.
Takeuchi, Tomio: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Saino, Tetsushi; and Koyama, Michinori, 4,185,156, Cl. 562-440.000.
Talbot, Howard M., to General Electric Company. Mold apparatus. 4,184,835, Cl. 425-577.000.
Talmud, Fred M.; and Garcia-Mallol, Juan-Antonio, to Foster Wheeler Energy Corporation. Fluidized bed heat exchanger utilizing angularly extending heat exchange tubes. 4,184,455, Cl. 122-4.00D.
Talos Systems, Inc.: *See—*
Fencl, George A., 4,185,165, Cl. 178-19.000.
Tamura, Hisashi: *See—*
Sakai, Takao; Maki, Minoru; and Tamura, Hisashi, 4,184,796, Cl. 409-12.000.
Tamura, Yasuyuki: *See—*
Kuge, Tsukasa; Matsumoto, Toru; Watanabe, Tsuyoshi; and Tamura, Yasuyuki, 4,185,129, Cl. 430-120.000.
Tanaka, Toshiki P.: *See—*
Onoda, Seiichi; Tanaka, Toshiki P.; and Sumi, Masao, 4,184,744, Cl. 350-96.330.
Tanaka, Yoichi; Tsuruta, Masamichi; Takahashi, Koji; Hasegawa, Tsutomu; and Hori, Makoto, to TDK Electronic Co. Ferromagnetic-piezoelectric ceramic composition. 4,184,971, Cl. 252-62.900.
Tanaka, Yuji: *See—*
Kerman, Stephen E.; Hamatani, Fumikazu; Tsutsumi, Fumio; and Tanaka, Yuji, 4,185,173, Cl. 179-99.00P.
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, to Sharp Kabushiki Kaisha. Synthetic-speech calculators. 4,185,169, Cl. 179-1.05M.
Tankersley, Robert W., Jr.: *See—*
Ward, John W.; and Tankersley, Robert W., Jr., 4,185,097, Cl. 424-195.000.
Tanner, John E., Jr.; and Webster, Henry A., III, to United States of America, Navy. Simultaneous yellow smoke and yellow flame composition containing bismuth subnitrate. 4,184,901, Cl. 149-19.600.
Tanner, William J.: *See—*
Stewart, Herbert M.; and Tanner, William J., 4,184,601, Cl. 215-13.00R.
Tarusawa, Yasutaka, to Kabushiki Kaisha Suwa Seikosha. Electronic wristwatch with calculator having improved conductive packing sheet switch element. 4,184,321, Cl. 58-152.00R.
Tasaka, Eiji: *See—*
Uchida, Tsutomu; Ono, Zenichi; Nagashima, Makoto; Tasaka, Eiji; Mitsui, Shigeo; and Nomura, Keiichi, 4,184,800, Cl. 414-56.000.
Tataria, Harshad; Schneider, Alan A.; Travers, William A., Jr.; and Martin, Lee E., to Catalyst Research Corporation. Electrochemical cell for the detection of chlorine. 4,184,937, Cl. 204-195.00R.
Tatsumi, Youji; and Hachisu, Masuo, to Seiko Seiki Kabushiki Kaisha. Apparatus for measuring the waviness of a workpiece surface. 4,184,263, Cl. 33-178.00E.
Taylor, Andrew W.; Burton, George; and Clayton, John P., to Beecham Group Limited. Kentenimine intermediates for 6α-methoxy-α-carboxy penicillins. 4,185,014, Cl. 260-239.100.
Taylor, Gary N.: *See—*
Dean, Robert E.; Maydan, Dan; Moran, Joseph M.; and Taylor, Gary N., 4,185,202, Cl. 250-492.00A.
Taylor, Hillman W.: *See—*
Bubley, Henry J.; Lala, Louis A.; and Taylor, Hillman W., 4,184,427, Cl. 101-123.000.
Taylor, John B.; and Harrison, Derek R., to Roussel Uclaf. 1,2-Dihydro-6-phenyl-1H,4H-imidazobenzodiazepin-1-ones. 4,185,102, Cl. 424-246.000.
Taylor, Thomas E.; and Bryers, Richard W., to Foster Wheeler Energy Corporation. Coal feed system for a fluidized bed combustor. 4,184,456, Cl. 122-4.00D.
Taylor, Thomas E.: *See—*
Bryers, Richard W.; and Taylor, Thomas E., 4,184,438, Cl. 110-263.000.
TDK Electronic Co.: *See—*
Tanaka, Yoichi; Tsuruta, Masamichi; Takahashi, Koji; Hasegawa, Tsutomu; and Hori, Makoto, 4,184,971, Cl. 252-62.900.
Tecator Instrument AB: *See—*
Rynde, Leif G. R.; and Nordbeck, Carl P., 4,184,961, Cl. 210-232.000.
Technicon Instruments Corporation: *See—*
Cambiaso, Cesar L.; de Steenwinkel, Floris; Leek, Adrian E.; and Masson, Pierre L., 4,184,849, Cl. 23-230.00B.
Teitelbaum, Bernard R.: *See—*
Bode, James D.; and Teitelbaum, Bernard R., 4,184,934, Cl. 204-195.00S.
Tektronix, Inc.: *See—*
Morris, Robert W., 4,185,227, Cl. 315-13.0ST.
Teledyne Industries, Inc.: *See—*
Rezy, Bernard J., Jr., 4,184,328, Cl. 60-305.000.
Temino, Satoshi: *See—*
Matsui, Takayasu; and Temino, Satoshi, 4,184,713, Cl. 296-137.00R.
Temple, Chester S., to PPG Industries, Inc. Method of treating magnesium oxchloride and magnesium oxysulfate articles to reduce efflorescence. 4,185,066, Cl. 264-257.000.
Tenbrink, Arthur, Sr. Coin holder and counter. 4,184,590, Cl. 206-0.820.
Tenneco Chemicals, Inc.: *See—*
Walker, David G., 4,185,083, Cl. 423-449.000.
Tepina, Nina I.: *See—*
Petrovsky, Bogdan S.; Perlin, Samuil M.; Okunev, Anatoly A.; Nepomnyaschy, Lev I.; and Tepina, Nina I., 4,184,818, Cl. 417-569.000.
Terrels, Joseph L. Cup for paint sprayer. 4,184,778, Cl. 366-250.000.
Texaco Development Corporation: *See—*
Waddill, Harold G.; and Moss, Philip H., 4,185,149, Cl. 528-111.000.
Texaco Inc.: *See—*
Paull, Peter L.; and McGann, Rodney, 4,184,322, Cl. 60-39.020.
Schievelbein, Vernon H., 4,184,549, Cl. 166-269.000.
Texas Instruments Incorporated: *See—*
Hubing, James H.; and Liu, Charles C., 4,185,287, Cl. 343-761.000.
Textron Inc.: *See—*
Carey, Lee F., 4,184,238, Cl. 29-157.00C.
Thackaberry, Harold: *See—*
Feldstein, Michael; and Thackaberry, Harold, 4,185,309, Cl. 360-97.000.

Theidel, Hans: *See—*
Eckstein, Udo; and Theidel, Hans, 4,184,977, Cl. 252-301.220.
Thiele, Werner H.; and Erickson, Vedick A., to International Harvester Company. Seed cut-off adjustment for a planter dispenser. 4,184,610, Cl. 221-278.000.
Thien, Gerhard: *See—*
Kirchweger, Karl; Thien, Gerhard; and Fachbach, Heinz, 4,184,471, Cl. 123-198.00E.
Thiokol Corporation: *See—*
Bertozzi, Eugene R., 4,184,890, Cl. 106-287.260.
Thomas, Timothy J.; and Manguson, Harold A., to Donaldson Company, Inc. Pressure sensitive indicating device. 4,184,376, Cl. 73-709.000.
Thomas Willett & Company Limited: *See—*
Bentley, Peter N., 4,184,331, Cl. 60-375.000.
Thompson, Earl R.: *See—*
Erickson, John S.; Thompson, Earl R.; and Curran, Patrick M., 4,184,900, Cl. 148-32.000.
Thompson, Neil E. S., to Petrolite Corporation. Polymer compositions containing as antioxidants substituted hexahydropyrimidines. 4,185,005, Cl. 260-45.80N.
Thompson, Paul A.: *See—*
Kirch, William; and Thompson, Paul A., 4,184,979, Cl. 252-430.000.
Thompson, Robert B.; and Fortunko, Christopher M., to Rockwell International Corporation. Ultrasonic inspection of a cylindrical object. 4,184,374, Cl. 73-640.000.
Thompson, Stephen L. Alarm system for dispensing systems. 4,185,224, Cl. 340-684.000.
Thomson-CSF: *See—*
d'Auria, Luigi; Jacques, Andre; and Dubos, Jacques, 4,184,739, Cl. 350-96.150.
d'Auria, Luigi; Dubos, Jacques; and Jacques, Andre, 4,184,740, Cl. 350-96.160.
Drabowitch, Serge; and Daveau, Bernard, 4,185,286, Cl. 343-754.000.
Heymann, Roger, 4,185,226, Cl. 315-13.0ST.
Thoren, Torgny A. Method for the utilization of the heat energy of sewage. 4,184,856, Cl. 55-52.000.
Thornell, Ernest L. Reusable badge. 4,184,275, Cl. 40-1.500.
Thorpe, Terrance E.: *See—*
Roe, Geoffrey E.; and Thorpe, Terrance E., 4,184,695, Cl. 280-277.000.
Thumm, Hans T.: *See—*
Yeager, David M.; and Thumm, Hans T., 4,184,424, Cl. 100-99.000.
TIE/Communications, Inc.: *See—*
Kerman, Stephen E.; Hamatani, Fumikazu; Tsutsumi, Fumio; and Tanaka, Yuji, 4,185,173, Cl. 179-99.00P.
Tiemann, Jerome J.: *See—*
Engeler, William E.; Tiemann, Jerome J.; and Baertsch, Richard D., 4,185,318, Cl. 365-183.000.
Tighe Industries: *See—*
King, Leroy A., Jr., 4,184,494, Cl. 128-519.000.
Tihanyi, Jenoe, to Siemens Aktiengesellschaft. Opto-electronic sensing apparatus and method. 4,185,293, Cl. 357-32.000.
Timmerman, Walter J. H.: *See—*
Ryan, Rodger; and Timmerman, Walter J. H., 4,184,514, Cl. 137-861.000.
Timofeev, Andrei V.: *See—*
Pevzner, Lev V.; Ustkachkintsev, Alexandr N.; Yakobson, Boris V.; Timofeev, Andrei V.; Furman, Anna A.; Vaskanov, Sergei E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M., 4,184,972, Cl. 252-62.540.
Ting, Raymond M. L.: *See—*
Anderson, John W.; and Ting, Raymond M. L., 4,184,301, Cl. 52-478.000.
Tiru, Mandayam: *See—*
Blixt, Kjell G.; Tornmarck, Sven I. A.; Juhlin, Rolf; Salenstedt, Karl R.; and Tiru, Mandayam, 4,184,920, Cl. 435-19.000.
Tischer, Werner, to Zahnradfabrik Friedrichshafen AG. Two-circuit steering arrangement for motor vehicles. 4,184,560, Cl. 180-133.000.
Tobita, Hideyuki; and Mori, Toshio, to Hitachi, Ltd. Automatic washing machine. 4,184,347, Cl. 68-12.00R.
Tokarz, Richard D.: *See—*
Smith, Gregory C.; Tokarz, Richard D.; Parry, Harvey L., Jr.; and Braun, Daniel J., 4,184,536, Cl. 165-1.000.
Tokico Ltd.: *See—*
Karasudani, Yasuo, 4,184,571, Cl. 188-72.700.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Izawa, Koji; Komatsu, Kouichi; and Okamura, Mitsuyoshi, 4,185,271, Cl. 340-146.3AG.
Kamio, Nobuyuki, 4,185,219, Cl. 313-279.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Anezaki, Yoshimitsu, 4,185,223, Cl. 313-446.000.
Fujimoto, Yuichi, 4,185,198, Cl. 250-416.0TV.
Fujioka, Masahiko, 4,185,308, Cl. 360-97.000.
Iwahashi, Hiroshi; and Suzuki, Seigo, 4,185,321, Cl. 365-204.000.
Miyake, Kazuhiko; and Yamada, Bunkichi, 4,185,300, Cl. 358-183.000.
Sumitomo, Yasusuke; and Ohashi, Yoshie, 4,185,294, Cl. 357-54.000.
Tolbert, William R.; Feder, Joseph; and Kimes, Richard C., to Monsanto Company. Continuous cell culture system. 4,184,916, Cl. 435-241.000.
Tolliver, Wilbur E. Manually formable stirrup mat reinforcement and pipe reinforcing method based thereon. 4,184,520, Cl. 140-107.000.
Tomaszewski, Thaddeus W.; Creutz, Hans-Gerhard, deceased (by Creutz, Katharina A., administratrix); and Clauss, Richard J., to Oxy Metal Industries Corporation. Trivalent chromium plating bath composition and process. 4,184,929, Cl. 204-51.000.
Tomioka, Michiaki. Neck for a stringed instrument. 4,184,404, Cl. 84-293.000.
Toorell, Sven, to AB Coripen. Lampholder. 4,184,734, Cl. 339-210.00T.
Toray Industries, Inc.: *See—*
Hosaka, Shuntaro, 4,184,992, Cl. 260-29.70T.
Tornmarck, Sven I. A.: *See—*
Blixt, Kjell G.; Tornmarck, Sven I. A.; Juhlin, Rolf; Salenstedt, Karl R.; and Tiru, Mandayam, 4,184,920, Cl. 435-19.000.
Tornquist, August. Directional self-supporting pyramid shaped hot water solar absorber. 4,184,481, Cl. 126-422.000.
Toshin Seiko Kabushiki Kaisha: *See—*
Uchida, Tsutomu; Ono, Zenichi; Nagashima, Makoto; Tasaka, Eiji; Mitsui, Shigeo; and Nomura, Keiichi, 4,184,800, Cl. 414-56.000.
Tottle, Milton: *See—*
Cutler, Jerome J., 4,184,345, Cl. 64-28.00R.
Towmotor Corporation: *See—*
Blaha, James G.; Melocik, Grant C.; and Wible, John E., 4,184,333, Cl. 60-420.000.
Townshend, Patrick C. Acoustic drums. 4,184,407, Cl. 84-411.00R.
Toyo Aluminum K.K.: *See—*
Kamimoto, Yoshiyuki, 4,185,183, Cl. 219-10.61R.
Toyo Pulp Co., Ltd.: *See—*
Hanaya, Morimasa, 4,184,526, Cl. 144-235.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Aoki, Keiji; Uenishi, Shigeru; and Toyota Jidosha Kogyo Kabushiki Kaisha, 4,184,458, Cl. 123-32.0EH.
Nakamura, Norihiko; Itoh, Takaaki; and Misumi, Toshimi, 4,185,054, Cl. 261-44.00C.
Sakakibara, Shigemi, 4,185,268, Cl. 340-69.000.
Suzuki, Ichiro; Kitamura, Kazuo; Wakimoto, Nobuo; and Watanabe, Hiroyuki, 4,184,697, Cl. 280-660.000.
Trainor, John B. Combination muffler and air filter. 4,184,564, Cl. 181-230.000.
Trautvetter, Werner: *See—*
Buning, Robert; Blaschke, Franz; and Trautvetter, Werner, 4,185,048, Cl. 525-80.000.
Travers, William A., Jr.: *See—*
Tataria, Harshad; Schneider, Alan A.; Travers, William A., Jr.; and Martin, Lee E., 4,184,937, Cl. 204-195.00R.
Trelleborgs Gummifabriks Aktiebolag: *See—*
Dehlen, Bengt L. A., 4,184,584, Cl. 198-706.000.
Tromelin, Jacques: *See—*
Nicolas, Yves; and Tromelin, Jacques, 4,184,546, Cl. 166-206.000.
Tronc, Dominique: *See—*
Azam, Guy; Bensussan, Andre; Levaillant, Claude; Huber, Harry; Mevel, Emile; and Tronc, Dominique, 4,184,956, Cl. 210-103.000.
Trotta, Robert A., to Gillette Company, The. Shaving unit. 4,184,246, Cl. 30-47.000.
Trotter, Albin; and Trotter, Ursus. Water flow responsive control for a liquid heater. 4,184,457, Cl. 122-448.00R.
Trotter, Ursus: *See—*
Trotter, Albin; and Trotter, Ursus, 4,184,457, Cl. 122-448.00R.
Trutzschler GmbH & Co. KG: *See—*
Erben, Ludwig, 4,184,361, Cl. 73-37.700.
Tsuchiya, Shiro: *See—*
Koda, Hiroyuki; Hamaya, Kunio; Yoshizaki, Hiroyuki; Kojima, Yutaka; Tsuchiya, Shiro; Fukuda, Shinichi; and Ikeno, Takashi, 4,184,911, Cl. 159-47.00R.
Tsuchiya, Tsuyoshi, to Copal Company Limited. Time indicating device for electronic digital type car clocks. 4,184,318, Cl. 58-23.0BA.
Tsujihara, Susumu: *See—*
Mitsuda, Katsumi; Yamamoto, Katsuhiko; Adachi, Katsumi; Tsujihara, Susumu; Saeki, Taiichi; and Takeda, Minoru, 4,185,301, Cl. 358-242.000.
Tsukatani, Masamitsu: *See—*
Shichijo, Hajime; Tsukatani, Masamitsu; and Kaji, Toshihiko, 4,184,447, Cl. 116-262.000.
Tsuruta, Masamichi: *See—*
Tanaka, Yoichi; Tsuruta, Masamichi; Takahashi, Koji; Hasegawa, Tsutomu; and Hori, Makoto, 4,184,971, Cl. 252-62.900.
Tsutsumi, Fumio: *See—*
Kerman, Stephen E.; Hamatani, Fumikazu; Tsutsumi, Fumio; and Tanaka, Yuji, 4,185,173, Cl. 179-99.00P.
Tureaud, Kenneth E., to Warner-Lambert Company. Denture and method of producing and fitting. 4,184,253, Cl. 433-171.000.
Turnbo, August Z. Vacuum-tube mass-transit system. 4,184,792, Cl. 406-51.000.
Tyrolt, Alex: *See—*
Rapp, Karl; Brett, Hans; Tyrolt, Alex; and Stabentheiner, Gabriel, 4,184,816, Cl. 417-499.000.
Tytko, Jean. Rotary screen appliance. 4,184,944, Cl. 209-288.000.
U.M.E.C.-Boydell (Belting) Limited: *See—*
Harvey, George A., 4,184,585, Cl. 198-707.000.
Uchida, Tsutomu; Ono, Zenichi; Nagashima, Makoto; Tasaka, Eiji; Mitsui, Shigeo; and Nomura, Keiichi, to Toshin Seiko Kabushiki Kaisha. Steel shape stacking apparatus. 4,184,800, Cl. 414-56.000.
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Ullmer, Harold J. Apparatus and method for recovering waste heat from flue gases. 4,184,544, Cl. 165-184.000.
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Angell, Richard G., Jr.; and Gross, Laurence H., 4,185,070, Cl. 264-328.000.
Butwell, Kenneth F.; and Kubek, Daniel J., 4,184,855, Cl. 55-48.000.
Lambrecht, Richard A., 4,185,317, Cl. 361-433.000.
Morlino, Robert J., 4,185,087, Cl. 424-70.000.
Union Oil Company of California: *See—*
Ward, John W.; and Inwood, Texas V., 4,185,040, Cl. 585-467.000.
Uniroyal, S.A.: *See—*
Mirtain, Henri J., 4,184,530, Cl. 152-361.0FP.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Birt, Dennis C. P.; and Pearce, Leonard J., 4,185,143, Cl. 429-119.000.
United States Gypsum Company: *See—*
Lange, Robert G.; and Schlotthauer, Harley L., 4,184,887, Cl. 106-111.000.
U. S. Industries, Inc.: *See—*
Fox, Gaston M.; and Wright, Thomas H., 4,184,230, Cl. 17-52.000.
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Greenspan, Donald J., 4,184,483, Cl. 128-759.000.
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Air Force: *See—*
Fauth, Thomas A.; and Adamski, Joseph A., 4,185,081, Cl. 423-299.000.
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Harrison, Earnest R., Jr., 4,185,247, Cl. 328-165.000.
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DeSantis, Charles M.; and Schwering, Felix, 4,185,289, Cl. 343-770.000.
Gerlach, Horst W. A., 4,185,252, Cl. 331-56.000.
Weiner, Maurice, 4,185,244, Cl. 328-67.000.
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Feldman, David K., 4,184,662, Cl. 251-82.000.
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Ryan, Rodger; and Timmerman, Walter J. H., 4,184,514, Cl. 137-861.000.
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Dillard, Paul A.; Fritz, Walter M.; and Lott, Dan R. Method of fabricating a photovoltaic module of a substantially transparent construction. 4,184,903, Cl. 156-104.000.
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Cornett, Jack E.; Corley, Ralph C.; Fraley, Thomas O.; and Saunders, Andrew A., Jr., 4,184,327, Cl. 60-240.000.
McGannon, William J., 4,184,491, Cl. 128-276.000.
Vorreiter, John W., 4,184,609, Cl. 220-445.000.
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Chrastina, William, 4,185,264, Cl. 340-852.000.
Giallorenzi, Thomas G., 4,185,274, Cl. 340-347.00P.
Gowan, Richard L., 4,185,273, Cl. 340-347.0DD.
Huang, Kwang T.; and Milner, Brian R., 4,185,161, Cl. 174-11.00R.
Hughes, Richard S.; and Gardner, Keith L., 4,184,767, Cl. 356-152.000.
Lackner, Anne M.; and Reif, Phillip G., 4,184,908, Cl. 156-636.000.
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Rein, Charles R., 4,184,539, Cl. 165-80.00B.
Tanner, John E., Jr.; and Webster, Henry A., III, 4,184,901, Cl. 149-19.600.
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Knazek, Richard A.; Gullino, Pietro M.; and Frankel, David S., 4,184,922, Cl. 435-284.000.
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Meijer, Albert J., 4,184,250, Cl. 30-346.510.
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Stevels, Albert L. N., 4,185,201, Cl. 250-483.000.
van den Boom, Petrus F. J.; and Seuter, Antonius M. J. H., 4,185,222, Cl. 313-486.000.
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Erickson, John S.; Thompson, Earl R.; and Curran, Patrick M., 4,184,900, Cl. 148-32.000.
Goller, Glen J.; Petraglia, Vincent J.; and Dews, George, 4,185,131, Cl. 427-113.000.
Pane, Francis C., Jr.; and Sepulveda, Domingo, 4,184,326, Cl. 60-39.320.
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Kolff, Willem J.; and Kessler, Thomas R., 4,184,497, Cl. 131-213.00A.
UOP Inc.: *See—*
Anderson, Mark C., 4,184,943, Cl. 208-310.00R.
Putz, Patricia J.; Lishka, Marie A.; and Latos, Edwin J., 4,184,983, Cl. 252-466.0PT.
Uram, Robert: *See—*
Kiscaden, Roy W.; Martz, Lyle F.; and Uram, Robert, 4,184,324, Cl. 60-39.18B.
USM Corporation: *See—*
Bennett, Robert G., Jr., 4,184,293, Cl. 151-238.00R.
Ellwood, Henry, 4,184,773, Cl. 366-91.000.
Swasey, Archie N.; and Grenier, George P., 4,184,824, Cl. 425-75.000.
Ustkachkintsev, Alexandr N.: *See—*
Pevzner, Lev V.; Ustkachkintsev, Alexandr N.; Yakobson, Boris V.; Timofeev, Andrei V.; Furman, Anna A.; Vaskanov, Sergei E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M., 4,184,972, Cl. 252-62.540.
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Ritsko, Joseph E.; Acla, Howard L.; Vanderpool, Clarence D.; Scheithauer, William, Jr.; and Harris, Geoffrey L., 4,184,868, Cl. 75-0.500.
Vanderspurt, Thomas H., to Celanese Corporation. Selective oxidation catalyst. 4,184,981, Cl. 252-437.000.
Van Leuven, James W. Liquid biocidal compositions comprising a mixture of silver ions and sodium pectate. 4,184,974, Cl. 252-106.000.
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Vaskanov, Sergei E.: *See—*
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E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M., 4,184,972, Cl. 252-62.540.

Vassilev, Grigor D.; Yordanov, Zdravko A.; Stoyanov, Lyubomir A.; Ralev, Rali V.; and Kostov, Kosta M., to So "Voden Transport". Method of and apparatus for measuring the thickness of one liquid overlying another. 4,184,363, Cl. 73-61.10R.

VDO Adolf Schindling AG: *See*—
Jung, Wilhelm; and Stark, Wolfgang, 4,184,369, Cl. 73-304.00C.

VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen: *See*—
Weisbach, Gunter, 4,184,673, Cl. 271-237.000.

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Flakus, Werner; and Disteldorf, Josef, 4,184,989, Cl. 260-29.2TN.

Vente, Paul: *See*—
Knipp, Ulrich; and Vente, Paul, 4,185,065, Cl. 264-254.000.

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Roe, Geoffrey E.; and Thorpe, Terrance E., 4,184,695, Cl. 280-277.000.

Vida, Julius A.: *See*—
Samour, Carlos M.; and Vida, Julius A., 4,185,108, Cl. 424-274.000.

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Baille-Barrelle, Henri; Vigneron, Maurice; and Lespagnol, Charles, 4,185,114, Cl. 424-301.000.

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Potapov, Ivan N.; Polukhin, Petr I.; Gremyakov, Ivan P.; Bitny, Mikhail A.; Vinogradov, Anatoly G.; Styrkin, German D.; Filimonov, Gennady V.; Kolesov, Vladimir M.; Raushenbakh, Igor M.; Pedas, Vasily P.; Ukhov, Alexandr V.; and Rodionov, Petr A., 4,184,352, Cl. 72-208.000.

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Bogese, Stephen B., II, 4,185,162, Cl. 174-32.000.

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Stoev, Stoycho M.; Mitrushev, Marin D.; Boshilov, Grozdan T.; and Radeva, Maria G., 4,184,965, Cl. 210-388.000.

Vitalini, Alberto. Prefabricated prismatic structure for building. 4,184,296, Cl. 52-79.400.

Vogel, Horst; and Kleiber, Herbert, to International Standard Electric Corporation. Ground station for the DME distance measuring system. 4,185,284, Cl. 343-6.80R.

Vogler, Kathleen R.: *See*—
Eizember, Richard F.; and Vogler, Kathleen R., 4,185,035, Cl. 260-577.000.

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Polzer, Erich; and Schmolz, Hubert, 4,184,330, Cl. 60-335.000.

Volterra, Giovanna: *See*—
Meli, Alberto; Bianchini, Claudio; del Soldato, Piero; Ghelardoni, Mario; Pestellini, Vittorio; and Volterra, Giovanna, 4,185,124, Cl. 424-324.000.

von der Eltz, Hans-Ulrich, to Hoechst Aktiengesellschaft. Continuous dyeing of cellulose fibers with reactive dyestuffs. 4,184,842, Cl. 8-1.00A.

von Herrmann, Pieter J.; and Williams, Ronald S., to General Electric Company. Apparatus for monitoring and controlling the operation of a dual platen press. 4,184,827, Cl. 425-135.000.

Von Lehman, Thomas M.: *See*—
Mirviss, Stanley B.; and Von Lehman, Thomas M., 4,185,053, Cl. 260-986.000.

von Reis, Charles E.: *See*—
Vadnay, Attila; and von Reis, Charles E., 4,184,360, Cl. 73-28.000.

Vorbeck, Donald W.: *See*—
Atchley, Frank W.; and Vorbeck, Donald W., 4,184,450, Cl. 119-51.00R.

Vorreiter, John W., to United States of America, National Aeronautics and Space Administration. Cryogenic container compound suspension strap. 4,184,609, Cl. 220-445.000.

Vought Corporation: *See*—
Evans, Charles B.; Fenton, John D.; and Staff, Bonner W., 4,184,373, Cl. 73-588.000.

Vrisakis, Georges: *See*—
Machurat, Jean; and Vrisakis, Georges, 4,185,001, Cl. 260-42.370.

W Bar E, Inc.: *See*—
Rossiter, Paul H.; and Loetterle, Marvin F., 4,185,057, Cl. 264-40.100.

W-K-M Wellhead Systems, Inc.: *See*—
Carmichael, James T.; Diehl, Robert J.; and Godare, William L., 4,184,504, Cl. 137-15.000.

Wacker-Chemie GmbH: *See*—
Huber, Peter; and Meusel, Jurgen, 4,184,880, Cl. 106-15.050.

Wackerman, Martha. Carrying device for potted plants or similar articles. 4,184,595, Cl. 206-423.000.

Waddill, Harold G.; and Moss, Philip H., to Texaco Development Corporation. Novel epoxy curing system. 4,185,149, Cl. 528-111.000.

Wagner, Arthur F., to Merck & Co., Inc. Non-adhesive ionene quaternary polymer compositions useful as bile acid sequestrants. 4,185,088, Cl. 424-78.000.

Wagner, George R., to Maddocks, Frank E., III; and Belli, Dennis E. Alignment system using two photocells directed at each other. 4,185,192, Cl. 250-221.000.

Wahlefeld, August W.: *See*—
Batz, Hans-Georg; Draeger, Brigitte; Wahlefeld, August W.; Weimann, Gunter; and Gruber, Wolfgang, 4,184,848, Cl. 23-230.00B.

Waite, Jerry A., to J. I. Case Company. Mechanized bag filling apparatus. 4,184,522, Cl. 141-231.000.

Wakefield, Alan W.: *See*—
Maltby, Thomas F.; Maltby, Robert C.; and Wakefield, Alan W., 4,184,555, Cl. 177-208.000.

Wakeley, Tendon, to Boeing Company, The. Seat track mechanism for operating station of aircraft refueling boom. 4,184,656, Cl. 244-118.600.

Wakimoto, Nobuo: *See*—
Suzuki, Ichiro; Kitamura, Kazuo; Wakimoto, Nobuo; and Watanabe, Hiroyuki, 4,184,697, Cl. 280-660.000.

Wakimoto, Yasuo. Folding canvas chair. 4,184,711, Cl. 297-16.000.

Walden, John: *See*—
Munday, Theodore F.; Goldstein, David; and Walden, John, 4,185,079, Cl. 423-210.000.

Walker, David G., to Tenneco Chemicals, Inc. Manufacture of finely divided carbon. 4,185,083, Cl. 423-449.000.

Walker, Robert A. Engine emission control device. 4,184,858, Cl. 55-228.000.

Walsh, Kenneth A.: *See*—
Mounts, Frank W.; Netravali, Arun N.; and Walsh, Kenneth A., 4,185,302, Cl. 358-261.000.
Mounts, Frank W.; Netravali, Arun N.; and Walsh, Kenneth A., 4,185,303, Cl. 358-261.000.

Walter Kidde & Company, Inc.: *See*—
Bricker, Jack E.; Galmiche, Rene G.; and Pottorff, Donald R., 4,184,573, Cl. 188-170.000.

Walters, Frank, to Ferranti Limited. Gas discharge display panel having an array of discharge cavities and a self scan glow transfer device formed by cavities in the array. 4,185,230, Cl. 315-169.400.

Ward, John D. Machine rails and carriages. 4,184,719, Cl. 308-3.00R.

Ward, John W.; and Inwood, Texas V., to Union Oil Company of California. Alkylation of aromatic hydrocarbons. 4,185,040, Cl. 585-467.000.

Ward, John W.; and Tankersley, Robert W., Jr., to A. H. Robins Company, Inc. Method of combatting Herpes simplex viruses with lignosulfonates. 4,185,097, Cl. 424-195.000.

Ward, William P., to NCR Corporation. Data storage system. 4,185,324, Cl. 365-222.000.

Warner-Lambert Company: *See*—
Tureaud, Kenneth E., 4,184,253, Cl. 433-171.000.
Westland, Roger D., 4,185,152, Cl. 546-284.000.

Wasserman, Rene; and Simm, Wolfgang, to Eutectic Corporation. Coated electrodes. 4,185,136, Cl. 428-368.000.

Watanabe, Hiroyuki: *See*—
Suzuki, Ichiro; Kitamura, Kazuo; Wakimoto, Nobuo; and Watanabe, Hiroyuki, 4,184,697, Cl. 280-660.000.

Watanabe, Mitsuru: *See*—
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Watanabe, Sadao; Itoh, Mitsuru; Sakairi, Tadashi; Funakoshi, Yasutomo; and Hiya, Kohji, to Matsushita Electric Industrial Co., Ltd. Magnet device. 4,185,262, Cl. 335-302.000.

Watanabe, Tadashi: *See*—
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Watanabe, Tsuyoshi: *See*—
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Waters, E. Dale, to McDonnell Douglas Corporation. Heat exchanger gas separator. 4,184,862, Cl. 165-76.000.

Watkins, Harry J.; and Storey, Christopher C., to H.T.B. Limited. Control means for the supply of operating mediums and sheet feeding machines having the same. 4,184,672, Cl. 271-105.000.

Watson, James M.; and Chepregi, Alan. Process for preparing 4-phenyl-1,3-dioxane. 4,185,019, Cl. 260-340.700.

Weaver, Harry R.: *See*—
Ammon, J. Preston; and Weaver, Harry R., 4,184,735, Cl. 339-217.00S.

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Little, Carl H., 4,184,705, Cl. 292-247.000.

Webster, David F. Tire inspection and recording device. 4,184,365, Cl. 73-146.000.

Webster, Henry A., III: *See*—
Tanner, John E., Jr.; and Webster, Henry A., III, 4,184,901, Cl. 149-19.600.

Wedman, Leonard N.: *See*—
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Weidemann, Robert W.: *See*—
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Weil, Rudolf: *See*—
Dorner, Friedrich; Scriba, Marianne; and Weil, Rudolf, 4,184,917, Cl. 435-68.000.

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Batz, Hans-Georg; Draeger, Brigitte; Wahlefeld, August W.; Weimann, Gunter; and Gruber, Wolfgang, 4,184,848, Cl. 23-230.00B.

Weiner, Maurice, to United States of America, Army. High voltage nanosecond pulser using a repetitive series interrupter. 4,185,244, Cl. 328-67.000.

Weisbach, Gunter, to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Method of and an apparatus for aligning sheets advancing in an overlapping array to a printing machine. 4,184,673, Cl. 271-237.000.

Welch, Richard O.: *See*—
Stollberg, Ray H.; Johnson, Wendell J.; and Welch, Richard O., 4,184,625, Cl. 229-23.0BT.

Wenger, La Von G.; Clark, Douglas S.; and Hauck, Bobbie W., to Wenger Manufacturing. High-output method for producing dense, uniformly layered meat analogue product. 4,185,123, Cl. 426-272.000.

Wenger Manufacturing: *See*—
Wenger, La Von G.; Clark, Douglas S.; and Hauck, Bobbie W., 4,185,123, Cl. 426-272.000.

Wernicke, Ubbo: *See*—
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Wescan, Inc.: *See*—
Woodley, Keith R., 4,184,444, Cl. 113-120.0XY.

Wescom Switching, Inc.: *See*—
Regan, John F., 4,185,250, Cl. 330-107.000.

Wessa, Theo. Process and apparatus for the manufacture of clear ice bodies. 4,184,339, Cl. 62-68.000.

West & Son (Engineers) Limited: *See*—
Brown, John E., 4,184,690, Cl. 277-102.000.

Western Electric Company, Incorporated: *See*—
Lynch, Brian; and Wright, James G., Jr., 4,184,913, Cl. 162-106.000.

Westinghouse Electric Corp.: *See*—
Ewanus, Walter; and McKay, George A., 4,185,241, Cl. 325-47.000.
Fovargue, Arthur G., 4,185,259, Cl. 335-167.000.
Kiscaden, Roy W.; Martz, Lyle F.; and Uram, Robert, 4,184,324, Cl. 60-39.18B.
Lange, Frederick F., 4,184,882, Cl. 106-44.000.
Marmo, Anthony R., 4,184,959, Cl. 210-179.000.
McMillen, James W., Jr.; and Finley, James D., 4,185,208, Cl. 307-140.000.
Mole, Cecil J.; Haller, Henry E., III; and Wedman, Leonard N., 4,185,216, Cl. 310-178.000.
Oberg, Albert E., 4,185,220, Cl. 313-478.000.
Young, Robert G., 4,185,221, Cl. 313-485.000.

Westland, Roger D., to Warner-Lambert Company. Thiazolidinyl alkoxy pyridines. 4,185,152, Cl. 546-284.000.

Westvaco Corporation: *See*—
Dellicolli, Humbert T.; and Dilling, Peter, 4,184,866, Cl. 71-65.000.
Lin, Stephen V., 4,184,845, Cl. 8-34.000.

Westwood Pharmaceuticals Inc.: *See*—
Samour, Carlos M.; and Vida, Julius A., 4,185,108, Cl. 424-274.000.

Wey, Robert A.: *See*—
Hawk, Robert M.; and Wey, Robert A., 4,184,741, Cl. 350-96.200.

Wheatley Company: *See*—
Morris, Dow V.; and Glahn, Robert J., 4,184,411, Cl. 92-171.000.

Whirlpool Corporation: *See*—
Laughlin, James P.; and Eisenbrandt, Gerald A., 4,184,340, Cl. 62-129.000.

White, Ralph L., Jr.; and Yu, Chia-Nien, to Morton-Norwich Products, Inc. 5-(4-Nitrophenyl)-2-furanmethanamines derivatives. 4,185,020, Cl. 260-347.300.

Whitefield, John T., to Allen Organ Company. Method and apparatus for introducing dynamic transient voices in an electronic musical instrument. 4,184,403, Cl. 84-1.110.

Whiteside, George D., to Polaroid Corporation. Scanning shutter blade arrangement with inertial wheel. 4,184,760, Cl. 354-230.000.

Whitmarsh, Denis H., to Lexique Limited. Truck for a skateboard. 4,184,693, Cl. 280-11.280.

Whittaker, Clyde A., to United States of America, Navy. Minehunting vehicle with a built-in search pattern. 4,185,326, Cl. 367-96.000.

Wible, John E.: *See*—
Blaha, James G.; Melocik, Grant C.; and Wible, John E., 4,184,333, Cl. 60-420.000.

Wide, Leif E.: *See*—
Hallgren, Henning R.; and Wide, Leif E., 4,184,847, Cl. 23-230.00B.

Widmer, Max, to Max Datwyler & Co. Constant bevel doctor blade and method and apparatus using same. 4,184,429, Cl. 101-169.000.

Wientjens, Gerardus T. A. M. Method and apparatus for cleaning liquids. 4,184,951, Cl. 210-78.000.

Wilbanks International, Inc.: *See*—
Metcalf, Robert L., 4,184,915, Cl. 162-352.000.

Wilhelm Maier & Sohne: *See*—
Maier, Erwin, 4,184,442, Cl. 112-178.000.

Wilhelm, Wolfgang, to Kruger & Co. KG. Method of and apparatus for monitoring or controlling the operation of a boom-type crane or the like. 4,185,280, Cl. 340-685.000.

Wille, Herbert: *See*—
Piesch, Steffen; and Wille, Herbert, 4,185,017, Cl. 260-239.30R.

Willens, Robert: *See*—
Buzzell, John E.; and Willens, Robert, 4,184,452, Cl. 119-106.000.

Wm. R. Stewart & Sons (Hacklemakers) Limited: *See*—
Stewart, David B.; and Preston, Edward G., 4,184,619, Cl. 225-94.000.

Williams, Chester I. Method of constructing an electrical radiant heating system. 4,185,186, Cl. 219-213.000.

Williams, David L.: *See*—
Barrington, James E.; Williams, David L.; Hitchcock, Charles J.; and Mullins, Thomas J., 4,184,258, Cl. 433-88.000.

Williams, Robert M. Coal grinding apparatus for direct fired burners. 4,184,640, Cl. 241-34.000.

Williams, Ronald S.: *See*—
von Herrmann, Pieter J.; and Williams, Ronald S., 4,184,827, Cl. 425-135.000.

Williams, Walter G., to Goodyear Tire & Rubber Company, The. Tire mold press. 4,184,823, Cl. 425-36.000.

Williamson, James: *See*—
Brown, William C., Jr.; Crete, Paul G.; Sullivan, Philip L.; and Williamson, James, 4,185,251, Cl. 330-279.000.

Wilson, David A. D. J. Three-dimensional game apparatus. 4,184,685, Cl. 273-241.000.

Wilson, James. Corrosion-resistant siphon assembly. 4,184,511, Cl. 137-590.000.

Wilson, Peter A.: *See*—
Rainer, Norman B.; and Wilson, Peter A., 4,184,495, Cl. 131-9.000.

Wilson, Phillip S.: *See*—
Mark, Victor; and Wilson, Phillip S., 4,184,994, Cl. 260-32.80R.

Windmoller & Holscher: *See*—
Achelpohl, Fritz; and Feldkamper, Richard, 4,184,627, Cl. 229-60.000.

Winiarski, Edward J.: *See*—
Buchan, Walter; Kropa, Gomer E.; and Winiarski, Edward J., 4,184,833, Cl. 425-311.000.

Winnacker, Helmut, to Preussag Aktiengellschaft. Deep sea underwater camera. 4,184,758, Cl. 354-64.000.

Wirbisky, Theodore J.: *See*—
Edwards, Donald W.; Kinard, Richard D.; Wirbisky, Theodore J.; and Angelucci, Richard J., 4,185,130, Cl. 427-47.000.

Wirz, Arno; and Becker, Willi, to Heidelberger Druckmaschinen Aktiengesellschaft. Monitoring device for missing and skewed sheets in sheet feeds. 4,184,674, Cl. 271-260.000.

Wisconsin Wires, Inc.: *See*—
McDonald, Robert L.; and Biasone, Frank, 4,184,519, Cl. 139-425.00A.

Witteman, Wilhelmus J.; and Reits, Bernard J., to Stichting Voor Fundamenteel Onderzoek der Materie. Set-up for a transversely excited laser operating at atmospheric pressure. 4,185,255, Cl. 331-94.5PE.

Witthaus, Martin: *See*—
Carduck, Franz-Josef; Drager, Axel; Effey, Gunter; Majmudar, Suresh; and Witthaus, Martin, 4,185,025, Cl. 260-406.000.

Wittmer, Steven L. Tool for straightening plumber's snakes. 4,184,356, Cl. 72-389.000.

Woerner, Douglas C.; and Manning, Andrew J., to GAF Corporation. Process for saturating a fiber mat of open structure. 4,185,133, Cl. 427-209.000.

Wolf, Raymond M., to Kraft, Inc. Apparatus for vacuum treatment of cheese. 4,184,825, Cl. 425-85.000.

Wolfe, Henry S. Fishing knife. 4,184,248, Cl. 30-340.000.

Wood, David, to Masson Scott Thrissell Engineering Ltd. Web cutting machines. 4,184,392, Cl. 83-88.000.

Woodgate, Bruce E.: *See*—
Benedicto, John S. J.; Woodgate, Bruce E.; and Hallberg, Frederick C., 4,184,472, Cl. 125-23.00R.

Woodley, Keith R., to Wescan, Inc. Tapered plastic container with seamed metal end and method for making it. 4,184,444, Cl. 113-120.0XY.

Woodstream Corporation: *See*—
Lifshutz, Norman, 4,184,282, Cl. 43-90.000.

Woodward, Donald R.; and Marshall John W., to International Business Machines Corporation. Verifying circuit operation. 4,184,630, Cl. 235-302.400.

Wootten, Cameron R. Cleaning device. 4,184,222, Cl. 15-164.000.

Worthington Compressors, Inc.: *See*—
Mayer, Thomas E.; McCarthy, Richard A.; and Yokota, George, 4,184,508, Cl. 137-512.100.

Wren, John P.; and Buckner, Ian W., to Plessey Handel und Investments AG. Electrical control system for the movement of the pickup arm of a disc-record player. 4,184,687, Cl. 274-13.00R.

Wright, Ballard D.; and Clifford, Susan E., to Wright, Ballard D. Body fluid pressure indicator and regulator and method for continuously regulating and monitoring the pressure of a body fluid. 4,184,484, Cl. 128-748.000.

Wright, Hershel E. Foam dispensing device. 4,184,615, Cl. 222-190.000.

Wright, James G., Jr.: *See*—
Lynch, Brian; and Wright, James G., Jr., 4,184,913, Cl. 162-106.000.

Wright, Stephen, to International Standard Electric Corporation. Light coupling and modulating means. 4,184,738, Cl. 350-96.140.

Wright, Steve A.: *See*—
Lin, Shao-Chi; and Wright, Steve A., 4,185,194, Cl. 250-315.100.

Wright, Thomas H.: *See*—
Fox, Gaston M.; and Wright, Thomas H., 4,184,230, Cl. 17-52.000.

Wrigley, Charles Y.: *See*—
Lindmayer, Joseph; and Wrigley, Charles Y., 4,184,894, Cl. 136-89.0MS.

Wu, Souheng, to Du Pont de Nemours, E. I., and Company. Copolyether-esters as additives for fiber-reinforced polyethylene terephthalate. 4,184,997, Cl. 260-40.00R.

Wu, William C. L.: *See*—
MacAdams, John L.; Wu, William C. L.; and Joyner, Richard S., 4,185,067, Cl. 264-310.000.

Wurker, Julie. Assembly for adhesively splicing pliable tape ends. 4,185,134, Cl. 428-40.000.

Wyman, Robert E. Anti-escape gate for the entry tunnel of a crab trap. 4,184,283, Cl. 43-102.000.

Xerox Corporation: *See*—
Holladay, Thomas M., 4,185,304, Cl. 358-298.000.

Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,185,256, Cl. 331-94.50H.
Spehrley, Charles W., Jr., 4,184,622, Cl. 227-119.000.
Strella, Stephen; Seanor, Donald A.; Imperial, George R.; and Hoffend, Thomas R., 4,185,140, Cl. 428-418.000.
Xonics, Inc.: *See*—
Lin, Shao-Chi; and Wright, Steve A., 4,185,194, Cl. 250-315.100.
Yakobson, Boris V.: *See*—
Pevzner, Lev V.; Ustkachkintsev, Alexandr N.; Yakobson, Boris V.; Timofeev, Andrei V.; Furman, Anna A.; Vaskanov, Sergei E.; Alexeevsky, Vadim V.; Chatinian, Jury S.; Makarov, Felix K.; Radin, Vladimir I.; and Petrov, Viktor M., 4,184,972, Cl. 252-62.540.
Yamada, Bunkichi: *See*—
Miyake, Kazuhiko; and Yamada, Bunkichi, 4,185,300, Cl. 358-183.000.
Yamada, Shigeru: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, 4,184,401, Cl. 84-1.030.
Yamaga, Eiichi: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, 4,184,401, Cl. 84-1.030.
Yamamoto, Katsuhiko: *See*—
Mitsuda, Katsumi; Yamamoto, Katsuhiko; Adachi, Katsumi; Tsujihara, Susumu; Saeki, Taiichi; and Takeda, Minoru, 4,185,301, Cl. 358-242.000.
Yamamoto, Kazuo; Sekiguchi, Shizuo; and Miyawaki, Yozo, to Lion Fat & Oil Co., Ltd. Bleaching olefin sulfonates with phosphate and peroxide. 4,185,034, Cl. 260-513.00R.
Yamamoto, Yoshihisa: *See*—
Ishii, Yoshiya; Dohshita, Hidetoshi; Yamamoto, Yoshihisa; and Okazaki, Hiroshi, 4,184,459, Cl. 123-32.0AE.
Yamauchi, Toshiro; Saito, Takemi; and Kanayama, Shigehiro, to Fuji Photo Optical Co., Ltd. Color separation optical system for color television camera. 4,185,297, Cl. 358-55.000.
Yamazaki, Takayuki; Izumi, Takahisa; and Kawasaki, Hajime, to Nissan Motor Company, Limited. Catalytic converter with a catalyst bed supporter. 4,185,074, Cl. 422-177.000.
Yanagi, Yoshio: *See*—
Koga, Minoru; and Yanagi, Yoshio, 4,185,158, Cl. 13-18.00C.
Yasuda, Yoshinobu: *See*—
Kimata, Kei; Yasuda, Yoshinobu; Yoshida, Isamu; and Saruta, Masahiro, 4,184,505, Cl. 137-117.000.
Yasukawa, Teruo: *See*—
Sakakibara, Sakuichi; Sugisawa, Ko; Kimura, Takashi; Yasukawa, Teruo; and Matsushima, Kikuo, 4,185,125, Cl. 426-439.000.
Yates, Douglas A., to Mobil Tyco Solar Energy Corporation. Control of capillary die shaped crystal growth of silicon and germanium crystals. 4,184,907, Cl. 156-601.000.
Yates, Douglas A.: *See*—
Hatch, Arthur E.; and Yates, Douglas A., 4,185,076, Cl. 422-246.000.
Yazaki, Mutsunobu: *See*—
Ito, Fumio; and Yazaki, Mutsunobu, 4,184,759, Cl. 354-86.000.
Yeager, David M.; and Thumm, Hans T., to Browning-Ferris Industries of Ohio and Michigan, Inc. Waste material testing apparatus. 4,184,424, Cl. 100-99.000.
Yokota, George: *See*—
Meyer, Thomas E.; McCarthy, Richard A.; and Yokota, George, 4,184,508, Cl. 137-512.100.
Yokozeki, Kenzo: *See*—
Nakamori, Shigeru; Yokozeki, Kenzo; and Mitsugi, Koji, 4,184,918, Cl. 435-106.000.
Yoneda, Koji: *See*—
Ohashi, Takehisa; Takahashi, Satomi; and Yoneda, Koji, 4,185,153, Cl. 548-309.000.
Yordanov, Zdravko A.: *See*—
Vassilev, Grigor D.; Yordanov, Zdravko A.; Stoyanov, Lyubomir A.; Ralev, Rali V.; and Kostov, Kosta M., 4,184,363, Cl. 73-61.10R.
Yoshida, Hiroshi; and Ofusa, Masaatsu, to Yoshida Kogyo K.K. Apparatus for manufacturing a slide fastener stringer having a woven coiled element. 4,184,518, Cl. 139-35.000.
Yoshida, Isamu: *See*—
Kimata, Kei; Yasuda, Yoshinobu; Yoshida, Isamu; and Saruta, Masahiro, 4,184,505, Cl. 137-117.000.
Yoshida, Kimio: *See*—
Ono, Masaharu; Kurokawa, Hirofumi; Yoshida, Kimio; Itado, Tadashi; and Uchihara, Yasuhiro, 4,184,235, Cl. 29-33.00R.
Yoshida Kogyo K.K.: *See*—
Yoshida, Hiroshi; and Ofusa, Masaatsu, 4,184,518, Cl. 139-35.000.
Yoshida, Touichi: *See*—
Koga, Noritaka; Yoshino, Nobuo; Yoshida, Touichi; and Takasugi, Motofumi, 4,184,463, Cl. 123-75.00R.
Yoshihara, Ichiro; Watanabe, Tadashi; and Iwase, Osamu, to Kansai Paint Company, Limited. Powdery coating composition. 4,185,045, Cl. 525-181.000.
Yoshikawa, Kazuo; and Andoh, Shizuo, to Fujitsu Limited. Gas discharge panel. 4,185,229, Cl. 315-169.400.
Yoshino, Nobuo: *See*—
Koga, Noritaka; Yoshino, Nobuo; Yoshida, Touichi; and Takasugi, Motofumi, 4,184,463, Cl. 123-75.00R.
Yoshizaki, Hiroyuki: *See*—
Koda, Hiroyuki; Hamaya, Kunio; Yoshizaki, Hiroyuki; Kojima, Yutaka; Tsuchiya, Shiro; Fukuda, Shinichi; and Ikeno, Takashi, 4,184,911, Cl. 159-47.00R.
Young, David M., to Massachusetts General Hospital, The. Nerve growth factor. 4,185,095, Cl. 424-177.000.
Young, Jason C., to James Hardie & Coy Pty. Limited. Method of making asbestos-cement laminates. 4,184,906, Cl. 156-299.000.
Young, Robert G., to Westinghouse Electric Corp. Double-ended fluorescent lamp having a partitioned envelope. 4,185,221, Cl. 313-485.000.
Yu, Chia-Nien, to Morton-Norwich Products, Inc. 5-(p-Nitrophenyl)-2-furaldehyde 2-(2-hydroxyethyl)hydrazone. 4,185,021, Cl. 260-347.700.
Yu, Chia-Nien: *See*—
White, Ralph L., Jr.; and Yu, Chia-Nien, 4,185,020, Cl. 260-347.300.
Yuan, Shao W. Solar heating and storage. 4,184,477, Cl. 126-433.000.
Yuasa, Yoshikatsu: *See*—
Nomura, Jiro; Nakatomi, Hiroshi; and Yuasa, Yoshikatsu, 4,184,812, Cl. 417-407.000.
Zacherl, Anton, to MTU Motoren-und Turbinen-Union. Air-supported bearing for turbine engines. 4,184,720, Cl. 308-9.000.
Zaganiaris, Emannuel J.: *See*—
Dabby, Sabah S.; and Zaganiaris, Emannuel J., 4,184,948, Cl. 210-25.000.
Zahnradfabrik Friedrichshafen AG: *See*—
Liebert, Karl-Heinz, 4,184,332, Cl. 60-386.000.
Tischer, Werner, 4,184,560, Cl. 180-133.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; Saino, Tetsushi; and Koyama, Michinori, 4,185,156, Cl. 562-440.000.
Zaks, Nathan. Door with magnetically controlled lock. 4,184,349, Cl. 70-118.000.
Zeitz, Vernon, to Johnson & Johnson. Talc compositions. 4,185,086, Cl. 424-69.000.
Zellweger Uster, Ltd.: *See*—
Aeppli, Kurt, 4,184,769, Cl. 356-430.000.
Zembrot, Anton: *See*—
Christin, Alan; and Zembrot, Anton, 4,184,268, Cl. 34-124.000.
Zenner, Armin: *See*—
Reischl, Artur; and Zenner, Armin, 4,184,990, Cl. 260-29.2TN.
Zimmer, Erich, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of making metallic oxide or carbide particles. 4,184,976, Cl. 252-301.10S.
Zimmite Corporation: *See*—
Scheurman, Clarence, III, 4,184,991, Cl. 260-29.6MN.
Zoumut, Hani F., to DAP Inc. Effervescent adhesive-forming product. 4,184,888, Cl. 106-178.000.
Zuk, Borys, to RCA Corporation. Contact de-bouncing circuit with common mode rejection. 4,185,210, Cl. 307-232.000.
Zuniga, Sergio P. Magnetic pickup assembly. 4,184,399, Cl. 84-1.150.
Zygmann, Helga: *See*—
Ahlgrim, Michael; Mietens, Gerhard; and Zygmann, Helga, 4,184,932, Cl. 204-129.430.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JANUARY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bahoshy, Bernard J.: *See*—
Klose, Robert E.; Szczesniak, Alina S.; Bahoshy, Bernard J.; and Sjonvall, Ragnar E., Re. 30,197, Cl. 426-3.000.

General Foods Corporation: *See*—
Klose, Robert E.; Szczesniak, Alina S.; Bahoshy, Bernard J.; and Sjonvall, Ragnar E., Re. 30,197, Cl. 426-3.000.

Klose, Robert E.; Szczesniak, Alina S.; Bahoshy, Bernard J.; and Sjonvall, Ragnar E., to General Foods Corporation. Chewing gum with improved storage qualities. Re. 30,197, Cl. 426-3.000.

Rheem Manufacturing Company: *See*—
Velarde, Clyde R., Re. 30,196, Cl. 29-243.560.

Sjonvall, Ragnar E.: *See*—
Klose, Robert E.; Szczesniak, Alina S.; Bahoshy, Bernard J.; and Sjonvall, Ragnar E., Re. 30,197, Cl. 426-3.000.

Szczesniak, Alina S.: *See*—
Klose, Robert E.; Szczesniak, Alina S.; Bahoshy, Bernard J.; and Sjonvall, Ragnar E., Re. 30,197, Cl. 426-3.000.

Velarde, Clyde R., to Rheem Manufacturing Company. Single piston operated clip device. Re. 30,196, Cl. 29-243.560.

LIST OF PLANT PATENTEES

Moore, Ralph S. Miniature rose plant. 4,495, 1-22-80, Cl. 7.000.

Moore, Ralph S. Miniature rose plant. 4,496, 1-22-80, Cl. 7.000.

LIST OF DESIGN PATENTEES

Adams, Nancy: *See*—
Gueret, Jean-Louis; and Adams, Nancy, 254,035, Cl. D28-7.000.

Adolph, Carl G. Decal or similar article for wearing apparel. 254,015, 1-22-80, Cl. D20-12.000.

Airway Industries, Inc.: *See*—
Davis, Michael, 253,991, Cl. D8-306.000.

Amber, George H., to Revetment Products, Ltd. Revetment link block. 254,033, 1-22-80, Cl. D25-87.000.

Amber, George H., to Revetment Products, Ltd. Revetment grid. 254,034, 1-22-80, Cl. D25-91.000.

Armstrong, John C.: *See*—
Palson, Richard C.; and Armstrong, John C., 254,027, Cl. D23-150.000.

Atkins, Gilbert D. Foot scraper or similar article. 253,990, 1-22-80, Cl. D7-182.000.

Barbagallo, Alfred T. Medical pillow. 254,029, 1-22-80, Cl. D24-36.000.

Beck, William M. Garment size divider. 254,016, 1-22-80, Cl. D20-28.000.

Bell Telephone Laboratories, Incorporated: *See*—
Genaro, Donald M.; Sylvester, Gordon E.; and Tyler, Daniel W., 254,006, Cl. D14-45.000.

Bond, George B. Floor mat for placement at front of toilet. 253,985, 1-22-80, Cl. D6-213.000.

Bristol-Myers Company: *See*—
McKenzie, Robert T., 254,028, Cl. D24-1.100.

Broudy, Charles E., to Hart Schaffner & Marx. Store front. 254,032, 1-22-80, Cl. D25-59.000.

Carter, Price D.: *See*—
McCarthy, Robert F.; and Carter, Price D., 253,994, Cl. D9-239.000.

Centeny, Norman: *See*—
Fritz, Albert J.; Centeny, Norman; and Pantoja, Sigfrid, 253,981, Cl. D6-184.000.

Champion International Corporation: *See*—
Roccaforte, Harry I., 253,993, Cl. D9-245.000.

Cohen, Joel M. Guitar. 254,011, 1-22-80, Cl. D17-14.000.

Computer Tech, a division of Computache, Inc.: *See*—
Reid, Zadock J. B. W.; and Lightner, Werner, 254,005, Cl. D14-43.000.

Dart Industries Inc.: *See*—
Greenwood, Donald L., 254,020, Cl. D21-129.000.
Painter, David L., 253,987, Cl. D7-41.000.
Schriever, Theodore W., 253,980, Cl. D6-179.000.

Data Packaging Corporation: *See*—
Lyman, George F., 253,986, Cl. D6-234.000.

Davidson, Jacob. Hard head gear head protector. 253,976, 1-22-80, Cl. D2-243.000.

Davis, Michael, to Airway Industries, Inc. Handle assembly for luggage case. 253,991, 1-22-80, Cl. D8-306.000.

Deschamps, Robert L.: *See*—
Wellwood, James J.; and Deschamps, Robert L., 254,004, Cl. D14-28.000.

Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., to Rubbermaid Commercial Products Inc. Follower block for a card file. 254,014, 1-22-80, Cl. D19-99.000.

Dunlop Limited: *See*—
Haines, Robert C., 254,021, Cl. D21-212.000.

Eagar, Lee J. Beverage container. 253,988, 1-22-80, Cl. D7-61.000.

Elsner, Ernst K., to Qualidux Industrial Company Limited. Film cassette viewer. 254,010, 1-22-80, Cl. D16-17.000.

Fetty, Harold D.: *See*—
Kolowski, Michael A.; Lindner, Daniel J.; Kwee, Henry T.; Roberts, Charles W.; and Fetty, Harold D., 254,000, Cl. D12-147.000.

Fordon, Howard B. Tennis training device or the like. 254,019, 1-22-80, Cl. D21-62.000.

Fritz, Albert J.; Centeny, Norman; and Pantoja, Sigfrid. Reading stand for exerciser. 253,981, 1-22-80, Cl. D6-184.000.

Genaro, Donald M.; Sylvester, Gordon E.; and Tyler, Daniel W., to Bell Telephone Laboratories, Incorporated. Transaction terminal adjunct or similar article. 254,006, 1-22-80, Cl. D14-45.000.

Goodyear Tire & Rubber Company, The: *See*—
Kolowski, Michael A.; Lindner, Daniel J.; Kwee, Henry T.; Roberts, Charles W.; and Fetty, Harold D., 254,000, Cl. D12-147.000.

Greenwood, Donald L., to Dart Industries Inc. Toy locomotive or the like. 254,020, 1-22-80, Cl. D21-129.000.

Grzybowski, John J.: *See*—
Peets, Robert S.; Grzybowski, John J.; and Lenger, Sidney A., 253,979, Cl. D6-170.000.

Gueret, Jean-Louis; and Adams, Nancy, to L'Oreal. Finger held make up applicator or implement. 254,035, 1-22-80, Cl. D28-7.000.

Haines, Robert C., to Dunlop Limited. Games racket. 254,021, 1-22-80, Cl. D21-212.000.

Hampf, Jan, to Tateco AB. Telephone accessory keyboard. 254,007, 1-22-80, Cl. D14-66.000.

Hampshire, James F.: *See*—
Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., 254,014, Cl. D19-99.000.

Hart Schaffner & Marx: *See*—
Broudy, Charles E., 254,032, Cl. D25-59.000.

Imai, Shogo, to Sharp Kabushiki Kaisha. Combined cassette player and recorder, phonograph, radio receiver and amplifier. 254,003, 1-22-80, Cl. D14-5.000.

Intini, Thomas, to Mayled/Intini Inc. Combined holder for a calendar, writing instrument and note paper dispenser. 254,013, 1-22-80, Cl. D19-21.000.

Jackson, Harold P., to McDonough Power Equipment Division of Fuqua Industries, Inc. Blade housing for a lawn mower. 254,008, 1-22-80, Cl. D15-17.000.

Kaspar, Joseph M., to Piscataway-Conoy Indians, Inc. Peace-pipe pendant or similar article. 253,997, 1-22-80, Cl. D11-811.000.
Knight, Jane C.; and Norman, Robert M. Giraffe swing seat. 254,022, 1-22-80, Cl. D21-246.000.
Knight, Jane C.; and Norman, Robert M. Lion swing seat. 254,023, 1-22-80, Cl. D21-246.000.
Kolowski, Michael A.; Lindner, Daniel J.; Kwee, Henry T.; Roberts, Charles W.; and Fetty, Harold D., to Goodyear Tire & Rubber Company, The. Tire. 254,000, 1-22-80, Cl. D12-147.000.
Kwee, Henry T.: *See—*
Kolowski, Michael A.; Lindner, Daniel J.; Kwee, Henry T.; Roberts, Charles W.; and Fetty, Harold D., 254,000, Cl. D12-147.000.
Larsson, Carl G.: *See—*
Malm, Nils O. S.; and Larsson, Carl G., 254,018, Cl. D21-14.000.
Lenger, Sidney A.: *See—*
Peets, Robert S.; Grzybowski, John J.; and Lenger, Sidney A., 253,979, Cl. D6-170.000.
Lenski, Kathleen A. Violin chin rest. 254,012, 1-22-80, Cl. D17-20.000.
Lightner, Werner: *See—*
Reid, Zadock J. B. W.; and Lightner, Werner, 254,005, Cl. D14-43.000.
Lindner, Daniel J.: *See—*
Kolowski, Michael A.; Lindner, Daniel J.; Kwee, Henry T.; Roberts, Charles W.; and Fetty, Harold D., 254,000, Cl. D12-147.000.
L'Oreal: *See—*
Gueret, Jean-Louis; and Adams, Nancy, 254,035, Cl. D28-7.000.
Lutron Electronics Co., Inc.: *See—*
Mayo, Noel, 254,001, Cl. D13-32.000.
Lyman, George F., to Data Packaging Corporation. Foldable display for photographs or the like. 253,986, 1-22-80, Cl. D6-234.000.
Mahoney, William F. Collar clip. 253,977, 1-22-80, Cl. D2-407.000.
Malm, Nils O. S.; and Larsson, Carl G. Table for playing a ball game. 254,018, 1-22-80, Cl. D21-14.000.
Mayled/Intini Inc.: *See—*
Intini, Thomas, 254,013, Cl. D19-21.000.
Mayo, Noel, to Lutron Electronics Co., Inc. Light dimmer switch. 254,001, 1-22-80, Cl. D13-32.000.
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Jackson, Harold P., 254,008, Cl. D15-17.000.
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Norman, Robert M.: *See—*
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Pantoja, Sigfrid: *See—*
Fritz, Albert J.; Centeny, Norman; and Pantoja, Sigfrid, 253,981, Cl. D6-184.000.
Parker, Douglas W. Fishing lure. 254,024, 1-22-80, Cl. D22-27.000.
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Kaspar, Joseph M., 253,997, Cl. D11-811.000.
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Elsner, Ernst K., 254,010, Cl. D16-17.000.
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Roberts, Charles W.: *See—*
Kolowski, Michael A.; Lindner, Daniel J.; Kwee, Henry T.; Roberts, Charles W.; and Fetty, Harold D., 254,000, Cl. D12-147.000.
Roccaforte, Harry I., to Champion International Corporation. Carton blank. 253,993, 1-22-80, Cl. D9-245.000.
Rubbermaid Commercial Products Inc.: *See—*
Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., 254,014, Cl. D19-99.000.
Schafer, Gregory. Electrical control enclosure. 254,002, 1-22-80, Cl. D13-40.000.
Schriever, Theodore W., to Dart Industries Inc. Multiple table unit. 253,980, 1-22-80, Cl. D6-179.000.
Schwab, Charles A.: *See—*
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SCM Corporation: *See—*
Osit, Robert, 253,978, Cl. D3-72.000.
Sharp Kabushiki Kaisha: *See—*
Imai, Shogo, 254,003, Cl. D14-5.000.
Shiroka, Lazer L. Jewelry pendant. 253,996, 1-22-80, Cl. D11-56.000.
Shure Brothers Incorporated: *See—*
Wellwood, James J.; and Deschamps, Robert L., 254,004, Cl. D14-28.000.
Singer Company, The: *See—*
Peets, Robert S.; Grzybowski, John J.; and Lenger, Sidney A., 253,979, Cl. D6-170.000.
Souza, Thomas, Jr. Pipe rail system. 254,031, 1-22-80, Cl. D25-44.000.
Stokebrand, Dennis D. Window washing machine. 254,009, 1-22-80, Cl. D15-34.000.
Sun, George C. Ornament. 253,998, 1-22-80, Cl. D11-121.000.
Swanson, John L. Back support pad. 253,982, 1-22-80, Cl. D6-200.000.
Sylvester, Gordon E.: *See—*
Genaro, Donald M.; Sylvester, Gordon E.; and Tyler, Daniel W., 254,006, Cl. D14-45.000.
Tateco AB: *See—*
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Terek, Greg P.: *See—*
Dolphin, Gary A., Sr.; Hampshire, James F.; and Terek, Greg P., 254,014, Cl. D19-99.000.
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Tyler, Daniel W.: *See—*
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Wellwood, James J.; and Deschamps, Robert L., to Shure Brothers Incorporated. Phonograph cartridge and stylus assembly. 254,004, 1-22-80, Cl. D14-28.000.
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NOTE.—First number, class; second number, subclass; third number, patent number

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1.91 4,184,213
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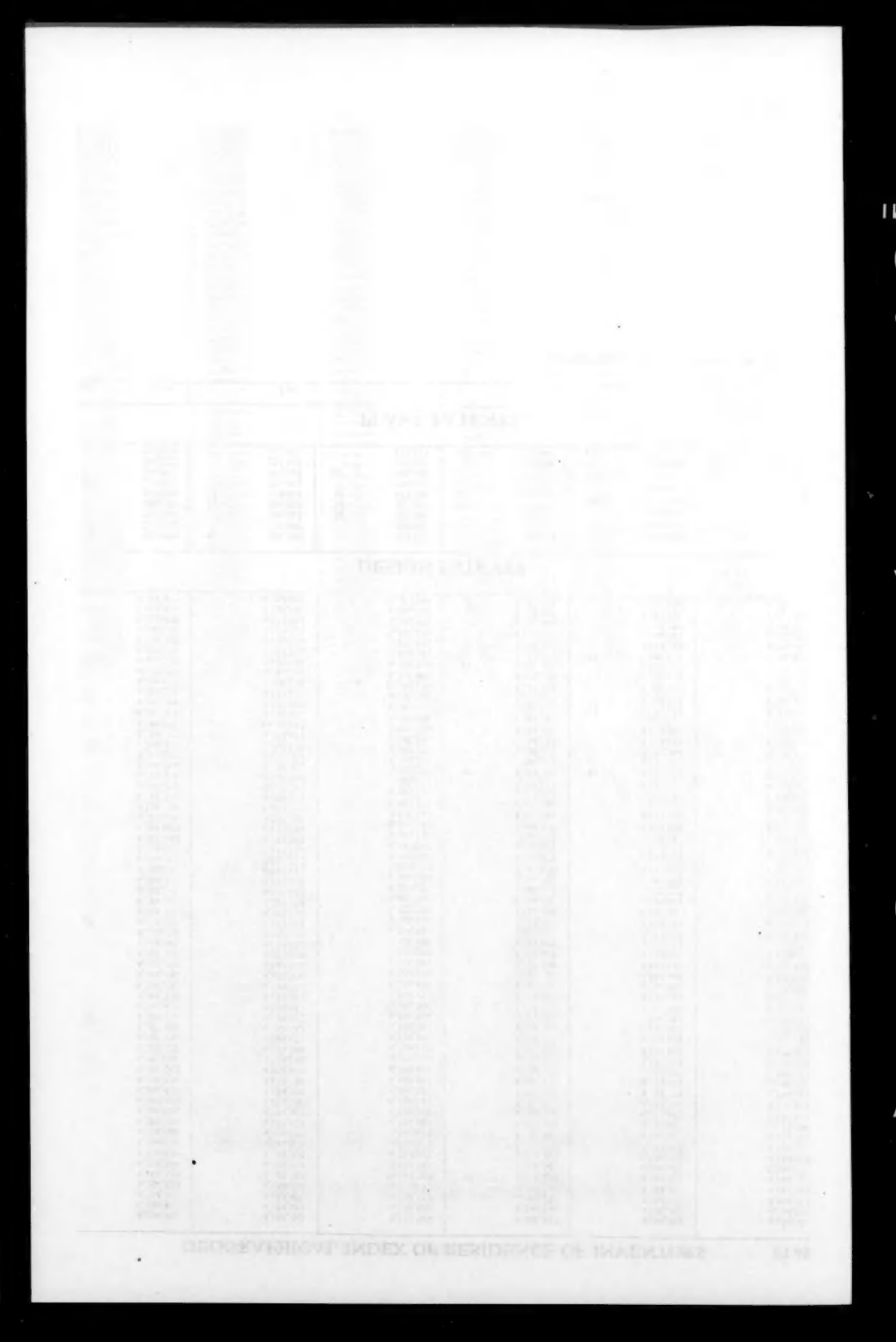

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